



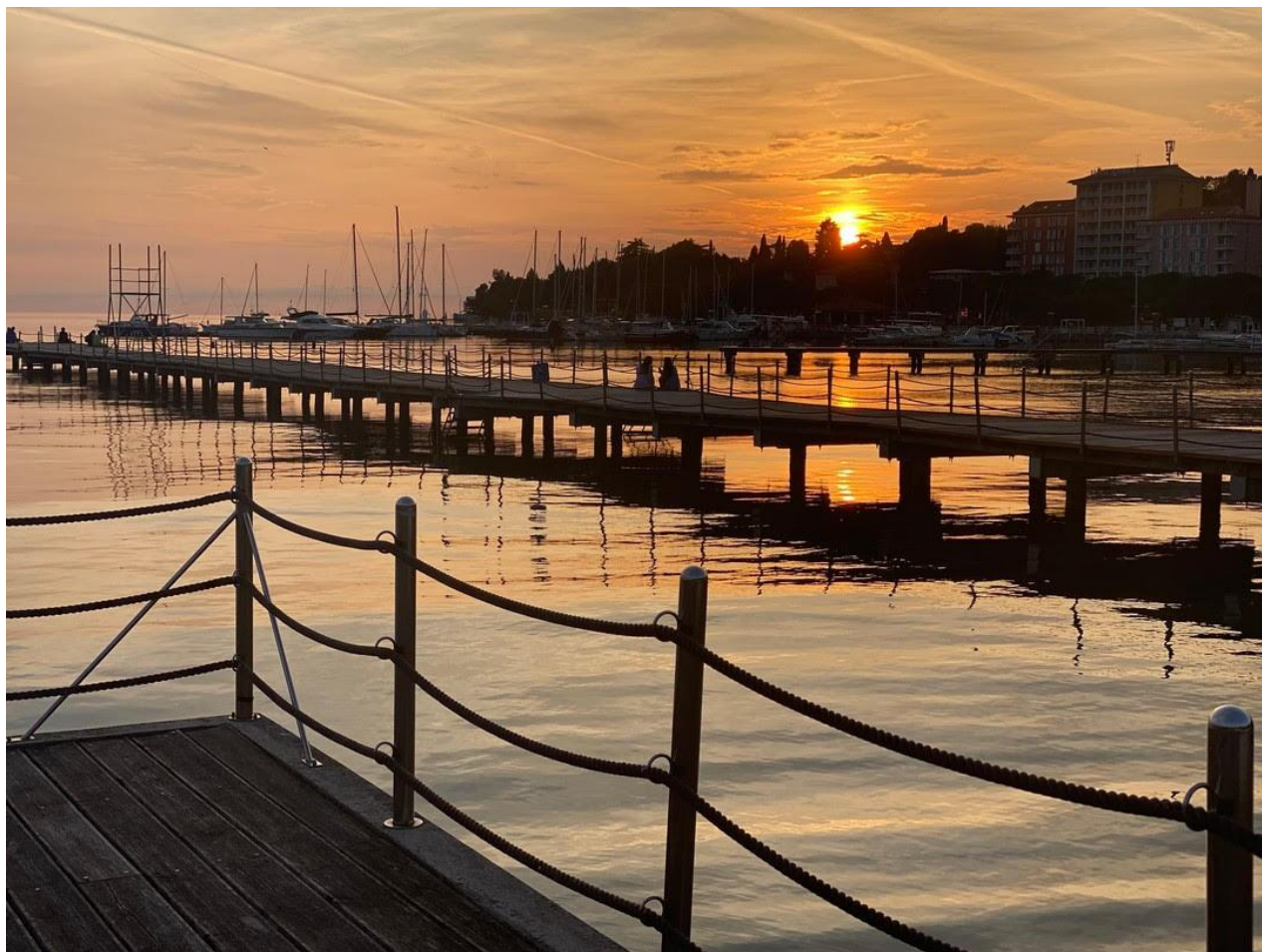
ZBORNICA ZDRAVSTVENE IN BABIŠKE NEGE SLOVENIJE -
ZVEZA STROKOVNIH DRUŠTEV MEDICINSKIH SESTER, BABIC
IN ZDRAVSTVENIH TEHNIKOV SLOVENIJE



Sekcija medicinskih sester in
zdravstvenih tehnikov v nefrologiji,
dializi in transplantaciji

8. SLOVENSKI NEFROLOŠKI KONGRES 2024

ZBORNIK IZVLEČKOV



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8. SLOVENSKI NEFROLOŠKI KONGRES 2024

8th SLOVENIAN CONGRESS OF NEPHROLOGY 2024

Lokacija: Grand Hotel Bernardin Portorož

Termin: 29. 11. 2024 do 1. 12. 2024

PROGRAM ZA MEDICINSKE SESTRE (AGENDA FOR NURSES):

1.dan: petek, 29. 11. 2024 (Day 1: Friday, 29th November)

URNIK (SCHEDULE)	TEMA (TOPIC TITLE)	PREDAVATELJ (SPEAKERS)
8:30-9:20	Registracija udeležencev (Participant registration)	Biserka Kesak
I. STROKOVNI SKLOP (I. SCIENTIFIC SESSION), Moderatorja (Moderators): Tadeja Kokelj Jeršin, Zvezdana Kaiser Kupnik		
9:30-10:00	Uvodni pozdrav in predstavitev programa <i>Welcome and programme presentation</i>	Tadeja Kokelj Jeršin
10:00-10:20	Obravnava in skrb za bolnika pri odločanju o nadomestnem zdravljenju pri kronični ledvični bolezni <i>Consideration and care of the patient when deciding on replacement treatment in chronic kidney disease</i>	Šeherezada Hrstič, Danica Železnik
10:20-10:40	Nekatera mnenja pacientov o izbiri nadomestnega zdravljenja pri končni ledvični odpovedi in kakovosti življenja po njej <i>Some opinions of patients on the choice of substitute treatment in end-time renal failure and the quality of life after it</i>	Ivana Glušič
10:40-11:00	<u>Kratka razprava: Ko KLB preide v KLO</u> <i>Brief discussion: When CKD becomes ESRD</i>	Moderatorja <i>Moderators</i>
11:00-11:30	Odmor (Coffe break)	
II. STROKOVNI SKLOP, (II. SCIENTIFIC SESSION): Moderatorja (Moderators): Darijan Marič, Biserka Kesak		
11:30-11:50	Nujna stanja pri hemodializnih bolnikih: ukrepi in vloga medicinske sestre <i>Urgent conditions in hemodialysis patients: actions and the role of the nurse</i>	Mersud Toromanović, Lovro Stopar

11:50-12:10	Uporaba hemoadsorpcijske kapsule Cytosorb pri bolnikih v intenzivnih enotah <i>Use of Cytosorb hemoadsorption capsule in ICU patients</i>	Vanja Peršič
12:10-12:30	Zdravljenje s Cytosorbom <i>Treatment with Cytosorb</i>	Klavdija Golob, Iris Šuligoj Ferlež
12:30-12:50	Vloga medicinske sestre pri izvajanju izventelesnega selektivnega čiščenja plazme (imunoadsorpcija in monet) <i>The role of nurse in performing extracorporeal selective plasma purification (imunoadsorption and monet)</i>	Marija Završnik, Elizabeta Kralj
12:50-13:10	Izredne razmere v času poplav v dializnem centru Slovenj Gradec <i>Emergency conditions during floods in dialysis center Slovenj Gradec</i>	Tadeja Grabner, Špela Potočnik
13:10-13:30	Ergonomija delovnega okolja v zdravstveni negi- ali je kaj novega? <i>Ergonomics of the working environment in healthcare - is it anything new</i>	Olivera Šterk Ljiljana Pejanović, Milica Podobnik, Tanja Dolinar
13.30-13:50	<u>Kratka razprava: Obremenitve delovnega okolja v zdravstvu</u> <u>Brief discussion: Healthcare work environment pressures</u>	Moderatorja Moderators
13:50-15:00	Kosilo (Lunch)	
III. STROKOVNI SKLOP, (III. SCIENTIFIC SESSION): Moderatorja (Moderators): Sonja Pečolar, Sabina Frumen Pivk		
15:00-15:30	Delovna uniforma medicinske sestre <i>Nurse's uniform</i>	Liljana Gaber
15:30-15:50	Oblikovanje nacionalnih protokolov iz področja nefrologije, dialize in transplantacije <i>Creation of national protocols in the field of nephrology, dialysis and transplantation</i>	Benedikta Lipičar Kovšča, Darijan Marič
15:50-16:10	Kadrovski standardi in normativi v zdravstveni negi kot del oblikovanja zdravstvene politike	Tadeja Kokelj Jeršin

	<i>Personnel standards and norms in nursing as part of health policy formulation</i>	
16:10-16:30	Organizacija dela na Kliničnem oddelku za nefrologijo Pediatrične klinike v Ljubljani <i>Work organisation in the Clinical Department of Nephrology at the Ljubljana Paediatric Clinic</i>	Tadeja Kokelj Jeršin, Mojca Bremec
16:30-16:50	Vpliv sodobnih tehnologij na management znanja in organizacijo dela na oddelku za dializo UKC Maribor <i>The influence of modern technologies on knowledge management and work organisation in the dialysis department of UKC Maribor</i>	Zvezdana Kaiser Kupnik, Ana Koroša, Urška Stoklas, Robert Ekart
16:50-17:30	Assessment, management and evaluation of uremic symptoms – a pivotal role for nurses	Jeanette Finderup, Danska
17:30-18:00	Odmor (Coffee break)	
IV. STROKOVNI SKLOP (IV. SCIENTIFIC SESSION): Moderatorja (Moderators): Tadeja Grabner, Ana Koroša		
18:00-18:30	Kaj mora medicinska sestra vedeti o peritonealni dializi? <i>What does a nurse need to know about peritoneal dialysis?</i>	Blaž Slonjšak
18:30-18:50	Peritonealna dializa pri otrocih <i>Peritoneal dialysis in children</i>	Tadeja Kokelj Jeršin, Darinka Djurić
18:50-19:10	Asistirana peritonealna dializa <i>Assisted peritoneal dialysis</i>	Bitežnik Alenka, Karin Andrič Jordan
19:10-19:30	Asistirana peritonealna dializa <i>Assisted peritoneal dialysis</i>	Mateja Knavs
20:30	Slavnostna večerja (Gala Dinner)	

2.dan: sobota, 30. 11. 2024 (Day 2: Saturday, 30th November):

URE	TEME	PREDAVATELJI
8:30-9:15	Registracija udeležencev (Participant registration)	Biserka Kesak
V. STROKOVNI SKLOP (V. SCIENTIFIC SESSION):		

Moderatorja (Moderators): Doroteja Žnidarko, Liljana Gaber		
09:20-9:40	Delovanje Sekcije medicinskih sester in zdravstvenih tehnikov v nefrologiji, dializi in transplantaciji <i>Activities of the Section of nurses in nephrology, dialysis and transplantation operating in the Nurses and Midwives Association of Slovenia</i>	Tadeja Kokelj Jeršin
9:40-10:20	The Role of Professional Nursing Associations: Opportunities & Challenges	Ilaria de Barbieri, Italija
10:20-10:40	Kurikulumi edukacije <i>Education curriculum</i>	Milica Podobnik
10:40-11:00	<u>Okrogla miza: Ničelna toleranca nasilju v zdravstvu</u> <i>Discussion: Zero tolerance to violence in healthcare</i>	Moderatorja (Moderators)
11:00-11:30	Odmor (Coffe break)	
VI. STROKOVNI SKLOP (VI. SCIENTIFIC SESSION): Moderatorja (Moderators): Mirjana Rep, Sanela Pečičnik		
11:30-12:10	Enhancing Vascular Access Care in Hemodialysis: Practical Applications of Point-of-Care Ultrasound	Ruben Iglesias, Španija
12:10-12:40	Klinično spremljanje arteriovenske fistule <i>Arteriovenous fistula monitoring and surveillance</i>	Matej Zrimšek
12:40-13:00	Zbadanje zahtevnih arteriovenskih fistul in prva zbadanja po operaciji s pomočjo ultrazvočne naprave <i>Puncturing of complicated arteriovenous fistulas (AVF) and first puncturing after operation with help of ultrassound guidance</i>	Biserka Kesak, Cvetka Likar
13:00-13:20	Sodobni žilni pristopi <i>Modern vascular access</i>	Sonja Ristova Stamenkovska
13:20-13:40	Kvaliteta življenja dializnih bolnikov z dializnim katetrom <i>Quality of life in patients on dialysis with a dialysis catheter</i>	Cvetka Likar
13:40-14:00	<u>Kratka razprava: Žilni pristop-vez z življenjem</u> <i>Brief discussion: The vascular approach-connection with life</i>	Moderatorja (Moderators)

<p>12:10-14:00</p> <p>Delavnica v dvorani 2 (Workshop in Hall 2)</p>	<p>Ultrasound guided cannulation of vascular access for haemodialysis</p> <p>Delavnica je omejena na 20 oseb, do zapolnitve mest se prijave sprejemajo ob registraciji.</p> <p><i>The workshop is limited to 20 people and applications will be accepted upon registration until places are filled.</i></p>	<p>Ruben Iglesias, Španija</p>
<p>14:00-15:00</p>	<p>Kosilo (Lunch)</p>	
<p>VII. STROKOVNI SKLOP (VII. SCIENTIFIC SESSION): Moderatorja (Moderators): Darinka Djurić, Žan Luka Krumpak</p>		
<p>15:00-15:20</p>	<p>Priprava pacientov na transplantacijo ledvice v Splošni bolnišnici Novo mesto</p> <p><i>Patient preparation for a kidney transplantation in a General hospital Novo mesto</i></p>	<p>Tanja Božič</p>
<p>15:20-15:40</p>	<p>Obravnava pacienta pred in po transplantaciji ledvice v UKC Maribor</p> <p><i>Treatment of patients before and after kidney transplantation in UKC Maribor</i></p>	<p>Anita Sadek, Davorka Bernkard</p>
<p>15:40-16:00</p>	<p>Vodenje pacienta na aktivnem čakalnem seznamu Eurotransplanta za presaditev ledvice</p> <p><i>Patient management on the active Eurotransplant waiting list for kidney transplantation</i></p>	<p>Sabina Zajc</p>
<p>16:00-16:20</p>	<p>Edukacija bolnika po transplantaciji ledvice</p> <p><i>Patient education after kidney transplantation</i></p>	<p>Martina Milošič</p>
<p>16:20-16:40</p>	<p>Zdravstvena nega otrok po transplantaciji ledvice</p> <p><i>The Care of Children after Kidney Transplant at the Paediatric Department of Nephrology</i></p>	<p>Simona Kotar Grandovec, Sanja Borčič</p>
<p>16:40-17:00</p>	<p>Hemodializa na domu</p> <p><i>Home hemodialysis</i></p>	<p>Elvedina Brkić</p>
<p>15:00-17:00</p> <p>Delavnica v dvorani 2 (Workshop in Hall 2)</p>	<p>Ultrasound guided cannulation of vascular access for haemodialysis</p> <p>Delavnica je omejena na 20 oseb, do zapolnitve mest se prijave sprejemajo ob registraciji</p> <p><i>The workshop is limited to 20 people and applications will be accepted upon registration until places are filled.</i></p>	<p>Ruben Iglesias, Španija</p>

17:00-17:30	Odmor (Coffe break)	
VIII. STROKOVNI SKLOP (VIII. SCIENTIFIC SESSION): Moderatorja (Moderators): Ivana Banovšek, Cvetka Krel		
17:30-17:50	Pogostost pojavljanja anksioznosti in depresije pri pacientih na hemodializi <i>Frequency of anxiety and depression in hemodialysis patients</i>	Miroslavka Galić, Janja Erzetič
17:50-18:10	Fabryeva bolezen; redka bolezen s katero se srečujemo tudi v nefrologiji <i>Fabrye's disease; a rare disease also encountered in nephrology</i>	Sonja Pečolar
18:10-18:30	<u>Kratka razprava: Pridružene bolezni pri pacientih s KLB</u> <i><u>Brief discussion: Associated diseases in patients with CKD</u></i>	Moderatorja (Moderators)
20:00	Večerja (Dinner)	

3.dan: nedelja, 1. 12. 2024 (Day 3: Sunday, 1st December):

URE	TEME	PREDAVATELJI
9:15-9:45	Registracija udeležencev (Participant registration)	Biserka Kesak
IX. STROKOVNI SKLOP (IX. SCIENTIFIC SESSION): Moderatorja (Moderators): Benedikta Lipičar Kovšča, Lidija Mlinarič		
9:45-10:05	Žeja kot negovalni problem <i>Thirst as a nursing problem</i>	Milica Podobnik, Ljiljana Pejanović, Kristina Stanković, Tanja Dolinar
10:05-10:25	Prehranska obravnava dializnega pacienta <i>Nutritional care of the dialysis patient</i>	Natalija Kuharič, Sanela Pečečnik, Maja Potisek
10:25-10:45	Uporaba bioimpedance za oceno prehranjenosti pacientov s kronično ledvično boleznijo <i>The use of bioimpedance in the assessment of nutritional status in patients with chronic kidney disease</i>	Matic Polc, Cvetka Krel, Sebastjan Bevc

10:45-11:15	<i>Odmor (Coffe break)</i>	
X. STROKOVNI SKLOP (X. SCIENTIFIC SESSION):		
11:15-13:00 <i>Delavnica</i> <i>(Workshop)</i>	<i>Lizin krožnik-kako svetovati, ko gre za sladkorno bolezen in kronično ledvično bolezen ali dializo</i> <i>Lizin krožnik: Advising on Diabetes and Chronic Kidney Disease or Dialysis</i>	<i>Natalija Kuharič,</i> <i>Sanela Peččnik</i>
13:00-13:30	<i>Skupščina Sekcije medicinskih sester in zdravstvenih tehnikov v nefrologiji, dializi in transplantaciji in zaključek srečanja</i> <i>General Meeting of the Association of Nurses and Health Technicians in Nephrology, Dialysis and Transplantation and closing of the conference</i>	<i>Biserka Kesak,</i> <i>Tadeja Kokelj</i> <i>Jeršin</i>
13:30	<i>Kosilo (Lunch)</i>	

Vsebina

OBRAVNAVA IN SKRBE ZA BOLNIKA PRI ODLOČANJU O NADOMESTNEM ZDRAVLJENJU PRI KRONIČNI LEDVIČNI BOLEZNI	1
Consideration and care of the patient when deciding on replacement treatment in chronic kidney disease	1
Šeherezada Hrstić, Danica Železnik.....	1
NEKATERA MNENJA PACIENTOV O IZBIRI NADOMESTNEGA ZDRAVLJENJA PRI KONČNI LEDVIČNI ODPOVEDI IN KAKOVOSTI ŽIVLJENJA PO NJEJ.....	4
Some opinions of patients on the choice of substitute treatment in end-time renal failure and the quality of life after it.....	4
Ivana Glušič.....	4
NUJNA STANJA PRI HEMODIALIZNIH BOLNIKI: UKREPI IN	7
VLOGA MEDICINSKE SESTRE.....	7
Emergency Situations in Hemodialysis Patients: Interventions and the Role of the Nurse.....	7
Mersud Toromanović, Lovro Stopar.....	7
UPORABA HEMOADSORPCIJSKE KAPSULE CYTOSORB PRI BOLNIKI V INTENZIVNIH ENOTAH	10
Use of Cytosorb hemoadsorption capsule in ICU patients.....	10
Vanja Peršič.....	10
ZDRAVLJENJE S CYTOSORBOM	12
Treatment with Cytosorb	12
Klavdija Golob, Iris Šuligoj.....	12
VLOGA MEDICINSKE SESTRE PRI IZVAJANJU IZVENTELESNEGA SELEKTIVNEGA ČIŠČENJA PLAZME (IMUNOADSORPCIJA IN MONET)	15
The role of nurse in performing extracorporeal selective plasma purification (immunoadsorption and monet).....	15
Marija Završnik, Elizabeta Kralj.....	15
IZREDNE RAZMERE V ČASU POPLAV V DIALIZNEM CENTRU SLOVENJ GRADEC	17
Emergency conditions during floods in dialysis center Slovenj Gradec	17
Tadeja Grabner, Špela Potočnik.....	17
ERGONOMIJA DELOVNEGA OKOLJA V ZDRAVSTVENI NEGI - ALI JE KAJ NOVEGA?	21
Ergonomics of the working environment in healthcare - is it anything new?	21
Milica Podobnik, Olivera Šterk, Ljiljana Pejanović.....	21
DELOVNA UNIFORMA MEDICINSKE SESTRE.....	24
Nurse's uniform	24
Liljana Gaber,	24
OBLIKOVANJE NACIONALNIH PROTOKOLOV IZ PODROČJA NEFROLOGIJE, DIALIZE IN TRANSPLANTACIJE.....	26

Creation of national protocols in the field of nephrology, dialysis and transplantation	26
Benedikta Lipičar Kovšca, Darijan Marič	26
KADROVSKI STANDARDI IN NORMATIVI V ZDRAVSTVENI NEGI KOT DEL OBLIKOVANJA ZDRAVSTVENE POLITIKE.....	27
Personnel standards and norms in nursing as part of health policy formulation	27
Tadeja Kokelj Jeršin	27
ORGANIZACIJA DELA NA KLINIČNEM ODDELKU ZA NEFROLOGIJO PEDIATRIČNE KLINIKE V LJUBLJANI31	
Work organisation in the Clinical Department of Nephrology at the Ljubljana Pediatric Clinic	31
Tadeja Kokelj Jeršin, Mojca Bremec	31
VPLIV SODOBNIH TEHNOLOGIJ NA OBVLADOVANJE ZNANJA IN ORGANIZACIJO DELA NA ODDELKU ZA DIALIZO UKC MARIBOR.....	34
The influence of modern technologies on knowledge management and work organisation in the dialysis department of UKC maribor	34
Zvezdana Kaiser Kupnik, Ana Koroša, Urška Stoklas, Robert Ekart	34
ASSESSMENT, MANAGEMENT AND EVALUATION OF UREMIC SYMPTOMS – A PIVOTAL ROLE FOR NURSES	37
Assoc. Prof. Jeanette Funderup	37
KAJ MORA MEDICINSKA SESTRA VEDETI O PERITONEALNI DIALIZI?	38
What nurses need know about peritoneal dialysis?	38
Blaž Slonjšak	38
PERITONEALNA DIALIZA PRI OTROCIH	40
Peritoneal dialysis in children.....	40
Tadeja Kokelj Jeršin, Darinka Djurić.....	40
ASISTIRANA PERITONEALNA DIALIZA	43
Assisted peritoneal dialysis	43
Bitežnik Alenka, Karin Andrič Jordan	43
PREDSTAVITEV DELOVANJA SEKCIJE MEDICINSKIH SESTER IN ZDRAVSTVENIH TEHNIKOV V NEFROLOGIJI, DIALIZI IN TRANSPLANTACIJI	46
Activities of the Section of nurses in nephrology, dialysis and transplantation operating in the Nurses and Midwives Association of Slovenia	46
Tadeja Kokelj Jeršin.....	46
THE ROLE OF PROFESSIONAL NURSING ASSOCIATIONS: OPPORTUNITIES & CHALLENGES	51
Dr. Ilaria de Barbieri	51
KURIKULUMI EDUKACIJE	52
Education curriculum	52
Milica Podobnik	52
ENHANCING VASCULAR ACCESS CARE IN HEMODIALYSIS: PRACTICAL APPLICATIONS OF POINT-OF-CARE ULTRASOUND.....	55

Ruben Iglesias	55
KLINIČNO SPREMLJANJE ARTERIOVENSKE FISTULE	56
Monitoring and surveillance of arteriovenous fistulas	56
Matej Zrimšek	56
ZBADANJE ZAHTEVNIH ARTERIOVENSKIH FISTUL IN PRVA ZBADANJA PO OPERACIJI S POMOČJO ULTRAZVOČNE NAPRAVE	59
Puncturing of complicated arteriovenous fistulas (AVF) and first puncturing after operation with help of ultrassound guidance	59
Kesak Biserka, Likar Cvetka.....	59
SODOBNI ŽILNI PRISTOPI	62
Modern vascular approaches	62
Sonja Ristova Stamenkovska,	62
KVALITETA ŽIVLJENJA DIALIZNIH BOLNIKOV Z DIALIZNIM KATETROM	65
Quality of Life in Dialysis Patients with a Dialysis Catheter.....	65
Cvetka Likar	65
PRIPRAVA PACIENTOV NA TRANSPLANTACIJO LEDVICE V SPLOŠNI BOLNIŠNICI NOVO MESTO	68
Patient preparation for a kidney transplantation in a General hospital Novo Mesto	68
Tanja Božič.....	68
OBRAVNAVA PACIENTA PRED IN PO TRANSPLANTACIJI LEDVICE V UKC MARIBOR	71
Treatment of the patient before and after kidney transplantation in UKC Maribor	71
Bernhard Davorka, Sadek Anita.....	71
VODENJE PACIENTA NA AKTIVNEM ČAKALNEM SEZNAMU EUROTRANSPLANTA ZA PRESADITEV LEDVICE	73
Patient management on the active Eurotransplant waiting list for kidney transplantation	73
Sabina Zajc.....	73
EDUKCIJA BOLNIKA PO TRANSPLANTACIJI LEDVICE	75
Patient education after kidney transplantation.....	75
Martina Milošič.....	75
ZDRAVSTVENA NEGA OTROK PO TRANSPLANTACIJI LEDVICE NA ODDELKU ZA NEFROLOGIJO PEDIATRIČNE KLINIKE LJUBLJANA	77
The Care of Children after Kidney Transplant at the Pediatric Department of Nephrology.....	77
Simona Kotar Grandovec, Sanja Borčič.....	77
HEMODIALIZA NA DOMU	79
Home hemodialysis	79
Elvedina Brkić.....	79
POGOSTOST POJAVLJANJA ANKSIOZNOSTI IN DEPRESIJE PRI PACIENTIH NA HEMODIALIZI	81
Frequency of anxiety and depression in hemodialysis patients	81

Miroslavka Galić, Janja Erzetič.....	81
FABRYEVA BOLEZEN; REDKA BOLEZEN S KATERO SE SREČUJEMO TUDI V NEFROLOGIJI	84
Fabrye's disease; a rare disease also encountered in nephrology.....	84
Sonja Pečolar.....	84
ŽEJA KOT NEGOVALNI PROBLEM.....	87
Thirst as a nursing problem.....	87
Milica Podobnik, Ljiljana Pejanović, Kristina Stanković,	87
PREHRANSKA OBRAVNAVA DIALIZNEGA PACIENTA	90
Nutritional care of the dialysis patient.....	90
Natalija Kuharič, Sanela Pečečnik, Maja Potisek.....	90
UPORABA BIOIMPENDANCE ZA OCENO PREHRANJENOSTI PACIENTOV S KRONIČNO LEDVIČNO BOLEZNIJO	93
The use of bioimpedance in the assessment of nutritional status in patients with chronic kidney disease	93
Matic Polc, Cvetka Krel, Sebastjan Bevc,	93
LIZIN KROŽNIK-KAKO SVETOVATI, KO GRE ZA SLADKORNO BOLEZEN IN KRONIČNO LEDVIČNO BOLEZEN ALI DIALIZO.	96
Lizin krožnik: Advising on Diabetes and Chronic Kidney Disease or Dialysis.....	96
Natalija Kuharič, Sanela Pečečnik	96

OBRAVNAVA IN SKRB ZA BOLNIKA PRI ODLOČANJU O NADOMESTNEM ZDRAVLJENJU PRI KRONIČNI LEDVIČNI BOLEZNI

Consideration and care of the patient when deciding on replacement treatment in chronic kidney disease

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IZVLEČEK

Uvod: Kronična ledvična bolezen, imenovana tudi kronična odpoved ledvic, vključuje postopno izgubo delovanja ledvic. Napredovana kronična ledvična bolezen lahko povzroči kopičenje nevarnih ravni tekočine, elektrolitov in odpadkov v telesu. Kronična ledvična bolezen lahko napreduje do končne odpovedi ledvic, ki je brez umetnega filtriranja (dialize) ali presaditve ledvice usodna. Namen članka je predstaviti obravnavo in skrb za bolnika pri odločanju o nadomestnem zdravljenju pri kronični ledvični bolezni.

Metoda: Uporabljena je bila kvantitativna raziskovalna metoda. Raziskava je potekala s pomočjo anketnega vprašalnika. Sekundarne vire smo zbrali s pomočjo podatkovnih baz Cobbis, ScienceDirect in PubMed ter spletnih iskalnikov Google in Google učenjak. V naši raziskavi so sodelovali bolniki, ki so člani Društva ledvičnih bolnikov Ljubljana. Zbrane podatke smo računalniško obdelali s pomočjo programa IBM SPSS Statistics, paket 27, ter jih prikazali v obliki preglednic.

Rezultati: Analiza je pokazala, da so bili anketiranci v povprečju zadovoljni z izbiro nadomestnega zdravljenja. Na odločitev o nadomestnem zdravljenju so v največji meri vplivali zdravstveni delavci, ki so z ustrežno edukacijo pomembno lajšali odločitev glede vrste nadomestnega zdravljenja ter vplivali na večje zadovoljstvo z izbiro le-tega. Največ informacij o nadomestnem zdravljenju so prejeli v specialistični nefrološki ambulanti, njihova odločitev pa je bila v splošnem pričakovano težka, občasno spremljana z občutki strahu, žalosti, nemoči, tesnobe in razočaranja.

Razprava: Raziskava je pokazala, kako težka je odločitev o vrsti nadomestnega zdravljenja ter kako oziroma na podlagi koga ali česa so se anketiranci odločali. Z ugotovitvijo, da jim je edukacija olajšala odločitev, pa vidimo, kako pomembna sta obravnava in skrb za bolnika že ob prvem obisku v ambulanti. Edukacija bolnikov je bistvenega pomena.

Ključne besede: kronična ledvična bolezen, nadomestna zdravljenja, edukacija bolnikov.

ABSTRACT

Introduction: Chronic kidney disease, also called chronic kidney failure, involves the gradual loss of kidney function. Advanced chronic kidney disease can cause dangerous levels of fluid, electrolytes and waste to build up in the body. Chronic kidney disease can progress to end-stage kidney failure, which is fatal without artificial filtration (dialysis) or a kidney transplant. The purpose of the article is to present the treatment and care for the patient when deciding on alternative treatment in chronic kidney disease.

Method: A quantitative research method was used. The research was carried out with the help of a survey questionnaire. Secondary sources were collected using Cobbis, ScienceDirect and PubMed databases as well as Google and Google Scholar. Patients who are members of the Association of Kidney Patients Ljubljana took part in our research. We processed the collected data using the IBM SPSS Statistics program, package 27 and displayed them in tables.

Results: The analysis showed that, on average, the respondents were satisfied with alternative treatment. The decision on alternative treatment was influenced to the greatest extent by medical professionals, who, with appropriate education, significantly eased the decision regarding the type of alternative treatment and influenced greater satisfaction with the choice of only that. They received the most information regarding replacement treatment in a specialist nephrology outpatient clinic. The patients anticipated their decision to be generally demanding and occasionally accompanied by feelings of fear, sadness, helplessness, anxiety and disappointment.

Discussion: The research showed how difficult it is to decide on the type of alternative treatment and who or what the respondents based their decisions on. With the finding that the education made their decision less demanding, we see how vital treatment and care for the patient are already at the first visit to the outpatient clinic. Patient education is essential.

Keywords: chronic kidney disease, alternative treatments, patient education.

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NEKATERA MNENJA PACIENTOV O IZBIRI NADOMESTNEGA ZDRAVLJENJA PRI KONČNI LEDVIČNI ODPOVEDI IN KAKOVOSTI ŽIVLJENJA PO NJEJ

Some opinions of patients on the choice of substitute treatment in end-time renal failure and the quality of life after it.

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IZVLEČEK

Teoretična izhodišča: Pacienti s končno ledvično odpovedjo imajo na voljo tri različne možnosti nadomestnega zdravljenja. Kadar se stanje ledvic pri akutno kritično bolnemu, ki se zdravi v enoti intenzivne terapije ne izboljša, bolezen preide v kronično, s tem pa pacient postane odvisen od nadomestnega zdravljenja. Število ljudi s končno ledvično odpovedjo po celem svetu narašča, zato je pomembna njihova odločitev o vrsti nadomestnega zdravljenja, ki je pogojena s primernostjo za izbrano vrsto. Namen magistrskega dela je predstaviti nekatera mnenja pacientov o izbiri nadomestnega zdravljenja pri končni ledvični odpovedi in kakovosti življenja po njej.

Metoda: Raziskava je temeljila na kvalitativni metodologiji, ki je vključevala pol strukturirane intervjuje na izbranem, namenskem vzorcu treh oseb. Intervjuji so vključevali nekatera pripravljena, ciljana vprašanja nanašajoča se na dejavnike, ki so vplivali na odločitev za obliko zdravljenja, na težave s katerimi se srečujejo in kakovost njihovega življenja.

Rezultati: Analiza vsebine intervjujev podaja pomembne spremembe pri odgovorih intervjuvancev o nadomestnem zdravljenju. Transplantacija ledvice ima veliko prednosti v primerjavi z drugima dvema vrstama nadomestnega zdravljenja. Ni potrebno obiskovati dializnega centra, kot v primeru hemodializnega zdravljenja, ni potrebno opravljati menjav peritonealnih raztopin, kot v primeru zdravljenja s peritonealno dializo, predvsem pa ni potrebna dieta z manjšim vnosom kalija in fosfata, ter ni potrebna omejitev vnosa tekočine. Zaradi vseh teh prednosti transplantacija ledvice kot nadomestna oblika zdravljenja odpovedi ledvic dolgoročno po mnenju anketirancev najboljše vpliva na kakovost življenja pacienta, saj prinese najmanj omejitev.

Razprava: Pri odločitvi ledvic je pomembno, da paciente seznanimo z vsemi oblikami nadomestnega zdravljenja. Zanje je pomembna njihova odločitev in možnost najboljše izbire nadomestnega zdravljenja. Od sprejetja tako bolezni, kot izbire vrste nadomestnega zdravljenja je odvisno kakšna bo nadaljnja kakovost življenja pacienta.

Ključne besede: akutna ledvična odpoved, kronična ledvična odpoved, hemodializa, peritonealna dializa, transplantacija ledvice, kakovost življenja, pacient.

ABSTRACT

Theoretical Foundations: Patients with end-stage renal disease (ESRD) have access to three distinct modes of replacement therapy. In cases where renal function does not improve in critically ill patients within the intensive care unit, the condition advances to a chronic stage, rendering the patient dependent on replacement therapy. The global incidence of ESRD is on the rise, underscoring the significance of patients' decisions regarding the type of replacement therapy, which must be aligned with their individual suitability. The objective of this master's thesis is to elucidate various patient perspectives on the selection of replacement therapy for ESRD and to assess the subsequent impact on their quality of life.

Methodology: This study employs a qualitative research methodology, incorporating semi-structured interviews with a purposive sample of three individuals. The interviews were structured around pre-formulated, targeted questions designed to explore the factors influencing treatment decisions, the challenges faced by the patients, and their quality of life post-treatment.

Results: The content analysis of the interviews reveals notable shifts in respondents' perceptions regarding replacement therapy. Renal transplantation emerges as having substantial advantages over the other two modes of replacement therapy. Specifically, it obviates the need for frequent visits to dialysis centres, as required in hemodialysis and eliminates the necessity for regular exchanges of peritoneal solutions, as in peritoneal dialysis. Furthermore, it alleviates dietary restrictions related to potassium and phosphate intake, as well as fluid intake limitations. Due to these cumulative benefits, kidney transplantation, as a mode of renal replacement therapy, is perceived by the respondents to exert the most favorable long-term influence on patients' quality of life, given its minimal impositions.

Discussion: In the context of renal failure, it is imperative to comprehensively inform patients about all available forms of replacement therapy. The decision-making process regarding the

most appropriate therapy is critical for ensuring optimal patient outcomes and quality of life. The interval from disease acceptance to the selection of replacement therapy is pivotal in determining the future quality of life for the patient.

Keywords: Acute renal failure, chronic renal failure, hemodialysis, peritoneal dialysis, kidney transplantation, quality of life, patient.

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NUJNA STANJA PRI HEMODIALIZNIH BOLNIKI: UKREPI IN VLOGA MEDICINSKE SESTRE

Emergency Situations in Hemodialysis Patients: Interventions and the Role of the Nurse

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IZVLEČEK

Poznavanje nujnih stanj in njihovo pravočasno prepoznavanje med hemodializo je temeljnega pomena za zmanjševanje obolevnosti in tveganja smrtnosti v povezavi s samim postopkom. Pri nujnem stanju dializnega pacienta sta najpomembnejša varnost bolnika in obvladovanje neželenega dogodka. Zdravstveno negovalno osebje in drugi izvajalci oskrbe morajo delovati kot ekipa, da bi dosegli cilj, saj lahko mnogo akutnih zapletov med hemodializo ob trenutnih hemodializnih monitorjih z vsemi vgrajenimi varnostnimi elementi pripišemo ravno človeški napaki. Ti primeri vključujejo sindrom elektrolitskega neravnovesja pri dializi, vensko zračno embolijo, izstop venske igle, krvavitev v žilnem dostopu, hemolizo, alergijske reakcije na dializator ali elemente sterilizacije ali kontaminacijo dializnega vodnega sistema in druge možne zaplete.

Pri hemodializi lahko pride do odvzema prevelike količine tekočine, kar lahko privede do slabosti, glavobola, krčev v mišicah, intradializne hipotenzije in siljenja na bruhanje. Med nujna stanja pri hemodializnem bolniku vključujemo tudi alergijske reakcije, motnjo zavesti, koagulacijo krvi v zunajtelesnem obtoku, akutno hemolizo in tehnične zaplete, ki lahko pripeljejo do dodatnih zapletov. Možna je krvavitev iz mesta vboda ter nastanek podkožnega krvnega izliva oz. hematoma. Ena od večjih in življenje ogrožajočih nevarnosti za hemodializnega bolnika je povečana koncentracija kalija v krvi, ki lahko povzroči nenaden srčni zastoj.

Hemodializni bolniki so pogosto soočeni z nujnimi stanji, ki zahtevajo hitro ukrepanje medicinskega osebja. Diplomirana medicinska sestra ima pri tem ključno vlogo, saj je v neposrednem stiku z bolnikom in lahko hitro prepozna spremembe v stanju ter sprejme ustrezne ukrepe. Njena vloga vključuje oceno vitalnih funkcij, spremljanje elektrolitskega ravnovesja in

elektrolitov, zagotavljanje ustrezne hemodialize, opazovanje žilnega pristopa za hemodializo ter ukrepanje ob pojavu nujnih stanj. Pomembno je, da je medicinska sestra dobro usposobljena za prepoznavanje in obravnavanje nujnih stanj, kot so intradializna hipotenzija, zračna embolija, alergijska reakcija, izpad venske igle, hiperkaliemija, krvavitve in druge zaplete, ki se lahko pojavijo pri hemodializnem bolniku. Z ustrezno pripravljenostjo in poznavanjem postopkov lahko medicinska sestra pomaga pri zagotavljanju varne in učinkovite hemodialize ter preprečuje morebitne zaplete pri hemodializnem bolniku.

Ključne besede: odpoved ledvic, hemodializa, nujna zdravstvena stanja, medicinska sestra.

ABSTRACT

Understanding and timely recognition of emergency conditions during hemodialysis are crucial for reducing morbidity and mortality associated with the procedure. In emergency situations involving dialysis patients, patient safety and the management of adverse events are paramount. Healthcare personnel and other care providers must work as a team to achieve this goal, as many acute complications during hemodialysis, despite the advanced hemodialysis monitors with built-in safety features, can be attributed to human error. These cases include electrolyte imbalance syndrome during dialysis, venous air embolism, venous needle dislodgement, bleeding at the vascular access site, hemolysis, allergic reactions to the dialyzer or sterilization elements, or contamination of the dialysis water system and other possible complications.

During hemodialysis, excessive fluid removal can lead to nausea, headache, muscle cramps, intradialytic hypotension, and vomiting. Emergency conditions in dialysis patients also include allergic reactions, consciousness disturbances, blood coagulation in the extracorporeal circuit, acute hemolysis, and technical issues that can lead to additional complications. Possible complications include bleeding at the puncture site and the formation of subcutaneous hematoma. One of the major and life-threatening dangers for dialysis patients is hyperkalemia, i.e., increased potassium concentration in the blood, which can cause sudden cardiac arrest.

Dialysis patients frequently face emergency situations requiring rapid intervention by medical staff. The registered nurse plays a crucial role in this process, as they are in direct contact with the patient and can quickly recognize changes in condition and take appropriate action. Their role includes assessing vital signs, monitoring electrolyte balance and levels, ensuring proper hemodialysis, observing the vascular access for dialysis, and responding to emergencies. It is important for nurses to be well-trained in recognizing and managing emergencies such as

intradialytic hypotension, air embolism, allergic reactions, venous needle dislodgement, hyperkalemia, bleeding, and other complications that may occur in dialysis patients. With proper preparedness and knowledge of procedures, nurses can help ensure safe and effective hemodialysis and prevent potential complications in dialysis patients.

Keywords: kidney failure, hemodialysis, emergency health situations, registered nurse.

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UPORABA HEMOADSORPCIJSKE KAPSULE CYTOSORB PRI BOLNIKI V INTENZIVNIH ENOTAH

Use of Cytosorb hemoadsorption capsule in ICU patients

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POVZETEK

Medtem ko hemodializa in hemofiltracija temeljita na principu ločevanja oz. odstranjevanja topljencev preko polprepustne membrane (difuzija in konvekcija), je hemoperfuzija postopek, ki temelji na principu adsorpcije. Adsorpcija je proces povratne ali nepovratne vezave topljencev na selektivne ali neselektivne materiale oz. adsorbense v hemadsorpcijskih kapsulah ali membranah. S hemoperfuzijo torej lahko odstranjujemo tudi večje molekule, npr. nekatere citokine, endotoksin, večje uremične toksine... Ena od najpogosteje uporabljenih neselektivnih hemoperfuzijskih kapsul je CytoSorb, ki je sestavljen iz biokompatibilnih polistirenskih polimernih zrn s porami in kanalčki. Vanje se ujamejo in nepovratno vežejo hidrofobne molekule velikosti od 5-60 kDa. Zelo majhni topljenci kot so npr. elektroliti se v pore ne ujamejo, medtem ko večje sestavine krvi ali plazme ko so npr. celice, protitelesa... zrnca obidejo. Odstranjevanje topljencev je torej odvisno tako od njihove velikosti kot tudi koncentracije. V osnovi je CytoSorb namenjen odstranjevanju citokinov in vnetnih posrednikov, vendar pa ne odstranjuje endotoksina (100 kDa), ki je glavni gradnik zunanje membrane gram negativnih bakterij in pomemben prožitelj vnetnega odgovora organizma. Cytosorb lahko uporabimo kot samostojno kapsulo ali pa jo vpnemo v krog zunajtelesnega krvnega obtoka (kombinacija z intermitentno hemodializo, kontinuiranimi metodami, ECMO,...). Če uporabljamo CytoSorb kot samostojno kapsulo z izvedbo hemoperfuzije, lahko izvajamo sistemsko antikoagulacijo s heparinom, v primeru povečanega tveganja za krvavitve ali v primeru kontraindikacij za uporabo heparina, pa CytoSorb vedno kombiniramo z eno od dializnih metod in izvajamo regionalno antikoagulacijo z natrijevim citratom. Poleg uporabe CytoSorba kot dopolnilnega zdravljenja septičnega šoka uporabljamo CytoSorb tudi pri drugih stanjih, kjer je v ospredju SIRS, npr. pri zdravljenju hudo potekajočih pankreatitisov, pri SIRS-

u po srčnem zastoju, pri bolnikih s hudim potekom CoViD-19 z ARDS, možno pa je CytoSorb uporabiti celo pri rabsdomiolizi in nekaterih zastrupitvah. Kapsula je v osnovi namenjena uporabi pri odraslih, a jo s prilagojenim predpisom lahko uporabljamo tudi pri otrocih.

Ključne besede: Cytosorb, absorbcija, zunaj telesni krvni obtok.

ABSTRACT

Hemodialysis and hemofiltration are extracorporeal methods based on the principle of separating and removing solutes across a semipermeable membrane (diffusion and convection), while hemoperfusion operates on the principle of adsorption. Adsorption is the process by which solutes bind reversibly or irreversibly to selective or non-selective materials or adsorbents in hemoadsorption capsules or membranes. Hemoperfusion can therefore remove larger molecules, such as certain cytokines, endotoxins, and larger uremic toxins. One of the most widely used non-selective hemoperfusion capsule is CytoSorb, which consists of biocompatible polystyrene polymer beads with pores and channels. Beads trap and irreversibly bind hydrophobic molecules ranging in size from 5 to 60 kDa. Very small solutes, such as electrolytes, do not enter the pores, while larger blood components, such as cells and antibodies, bypass the beads. The removal of solutes depends on their size and concentration. CytoSorb is primarily designed to remove cytokines and inflammatory mediators but does not remove endotoxin (100 kDa), the main component of the outer membrane of gram-negative bacteria and a key trigger of the body's inflammatory response. CytoSorb can be used as a standalone capsule or integrated into extracorporeal blood circuits (in combination with intermittent hemodialysis, continuous therapies, ECMO, etc.). When used as a standalone capsule for hemoperfusion, systemic anticoagulation with heparin can be applied. However, in cases of an increased risk of bleeding or contraindications for heparin use, CytoSorb is always combined with one of the dialysis methods, and regional anticoagulation with sodium citrate is used. In addition to being employed as an adjunct therapy in septic shock, CytoSorb can be also used in other conditions with SIRS (Systemic Inflammatory Response Syndrome), such as severe pancreatitis, post-cardiac arrest, in critically ill COVID-19 patients with ARDS... CytoSorb can even be used in cases of rhabdomyolysis and certain poisonings. The capsule was primarily intended for use in adults, but with adjusted protocols, it can also be used in pediatric patients.

Keywords: Cytosorb, absorption, outside the body is blood circulation

ZDRAVLJENJE S CYTOSORBOM

Treatment with Cytosorb

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IZVLEČEK

Teoretična izhodišča: Terapija CytoSorb temelji na zunajtelesnem postopku čiščenja krvi, za katerega se je izkazalo, da učinkovito znižuje čezmerne ravni vnetnih mediatorjev. Ta je namenjen ublažitvi čezmernega sistemskega vnetnega odziva oz. »citokinska nevihta«, povezanega s sistemskim hipervnetjem ali septičnim šokom. Tako se je potencialno mogoče izogniti življenjsko nevarnim zapletom citokinske nevihte in predvsem spodbuditi stabilizacijo hemodinamike. (CytoSorbents Europe, 2024). Za zdravljenje s cytosorbom se odločimo v začetnih stanjih seps, hipervnetnimi sindromih, hudih opeklinah ter pri kardiogenih šokih.

Metode: Za pregled literature smo sistematično pregledovale strokovne članke s pomočjo Google učenjak in Cobbis. Glavni iskalni ključni so bili »cytosorb«, »hemodializa« ter »kontinuirana veno-venozna hemodializa«. Članke smo iskale v slovenskem ter angleškem jeziku.

Rezultati: Skupno najdenih člankov je bilo 12. Po podrobnem pregledu smo jih zožali na 3, ki so najboljše ustrezali našemu članku. Osredotočile smo se na potek zdravljenja s Cytosorbom ter samo učinkovitost po zdravljenju.

Diskusija: Zdravljenje takih bolnikov s Cytosorbom v povezavi s kontinuirano veno-venozno hemodializo (CVVHD) je bil povezan z zmanjšanjem vnetja citokinov, kot tudi stabilizacijo hemodinamike in presnovne spremenljivke. Zaradi modulacije citokina Cytosorb lahko ponudi potencialno obetavno novost možnost zdravljenja hudega hipervnetja, ki se kaže s hemodinamsko nestabilnostjo in zahteva visoke odmerke vazopresorjev. Zdravljenje s Cytosorbom je bila varna in dobro prenašana, brez zaznanih neželenih dogodkov med zdravljenjem ali po njem in ga je bilo enostavno implementirati kot del dializnega sistema. Glede na pozitivne klinične izkušnje tega primera serije, so upravičena randomizirana kontrolirana preskušanja za nadaljnjo opredelitev možnih koristi tega novega zdravljenja (Trager & et al, 2019).

Cytosorb imajo večje prednosti pred drugimi dializatorji. Imajo sposobnost odstranjevanja širokega razpona molekulskih mas ter izboljšan očistek zaradi velike površine cytosorba. Cytosorbi se ne zanašajo na odstranjevanje tekočin za sam očistek toksina, s čimer se lahko izognemo časovnim omejitvam dializ. Za uporabo te tehnike je pomembno sorazmerje med začetno stopnjo ciljne molekule in stopnjo očistka. Torej višja kakor je začetna raven, boljši je očistek. Potrebno je pri bolnikih spremljati raven zdravil in jih po potrebi dopolniti z dodatnimi odmerki. Poleg tega je to zdravljenje povezano s trombocitopenijo in levkopenijo. (Ankawi & et al, 2019).

Zaključek: Zdravljenje s Cytosorbom zaenkrat še ni veliko raziskano in je potrebno še veliko raziskovanja na tem področju. V našem dializnem centru se poslužujemo zdravljenja s cytosorbom, vendar ne tako pogosto. Sestre med postopkom na 6 ur oz. po naročilu zdravnika vzamemo izvide po protokolu.

Ključne besede: hemodializa, kontinuirana venovenozna dializa, cytosorb

ABSTRACT

Theoretical Foundations: CytoSorb therapy is based on an external blood purification process that has been shown to effectively reduce excessive levels of inflammatory mediators. This is intended to mitigate excessive systemic inflammatory response or “cytokine storm” associated with systemic hyperinflammation or septic shock. In this way, it is potentially possible to avoid the life-threatening complications of the cytokine storm and, above all, to stimulate the stabilization of hemodynamics. (CytoSorbents Europe, 2024). Treatment with cytosorb is chosen in the initial stages of sepsis, hyperinflammatory syndromes, severe burns and cardiogenic shock.

Methods: For the literature review, we systematically reviewed professional articles using Google Scholar and Cobbis. The main search keywords were "cytosorb", "hemodialysis" and "continuous veno-venous hemodialysis". We searched for articles in Slovenian and English.

Results: A total of 12 articles were found. After a detailed review, we narrowed them down to 3 that best suited our article. We focused on the course of treatment with Cytosorb and the effectiveness after treatment.

Discussion: Treatment of such patients with CytoSorb in conjunction with continuous venovenous hemodialysis (CVVHD) was associated with a reduction in inflammatory cytokines, as well as stabilization of hemodynamics and metabolic variables. Due to cytokine modulation, CytoSorb may offer a potentially promising new treatment option for severe hyperinflammation that manifests with hemodynamic instability and requires high doses of vasopressors. CytoSorb treatment was safe and well tolerated, with no detectable adverse events during or after treatment and was easy to implement as part of a hemodialysis system. Given the positive clinical experience of this case series, randomized controlled trials are warranted to further define the potential benefits of this new treatment (Trager & et al, 2019).

Cytosorb has major advantages over other dialysats. They have the ability to remove a wide range of molecular weights and improved clearance due to the large surface area of cytosorb. Cytosorbs do not rely on fluid removal to clear the toxin itself, thereby avoiding the time constraints of dialysis. The ratio between the initial level of the target molecule and the degree of purification is important for the use of this technique. So the higher the starting level, the better the cleansing. It is necessary to monitor the level of drugs in patients and supplement them with additional doses if necessary. In addition, this treatment is associated with thrombocytopenia and leukopenia. (Ankawi & et al, 2019).

Conclusion: Treatment with Cytosorb has not yet been extensively researched and much research is still needed in this area. In our dialysis center, we use Cytosorb treatment, but not that often. Nurses during the procedure for 6 hours or according to the doctor's order, we take results according to the protocol.

Key words: hemodialysis, continuous venovenous hemodialysis, cytosorb

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VLOGA MEDICINSKE SESTRE PRI IZVAJANJU IZVENTELESNEGA SELEKTIVNEGA ČIŠČENJA PLAZME (IMUNOADSORBCIJA IN MONET)

The role of nurse in performing extracorporeal selective plasma purification (imunoadsorption and monet)

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IZVLEČEK

Zunajtelesno selektivno čiščenje plazme, je postopek, pri katerem iz pacientove plazme odstranimo bolezenske faktorje in očiščeno plazmo vrnemo nazaj pacientu. Prvi del postopka je enak že mnogim poznani plazmaferezi. V drugem delu postopka, se preko dodatnih filtrov (imunoadsorbcija, monet) plazma selektivno očisti posameznih faktorjev. Proceduro izvaja ustrezno usposobljena dializna medicinska sestra. Njene naloge so: prvotno zbrati ustrezne pacientove izvide, natančno pripraviti aparat, previdno in strokovno izvajanje procedure po navodilih zdravnika, nadzor vitalnih funkcij, preprečevanje oziroma ustrezno reagiranje ob komplikacijah, poznavanje bolezenskih stanj pri katerih izvajamo to proceduro, jemanje izvidov po protokolu, opazovanje, dokumentiranje in sporočanje zdravniku. Po zaključenem postopku po potrebi nadomestiti "zdrave" faktorje plazme. Zelo pomemben je individualni pristop, ker takšen način čiščenja plazme izvajamo pri različnih obolenjih, ki so prisotna v večjih težavnostnih stopnjah.

Ključne besede: afereza, plazmafereza, selektivna metoda, imunoadsorbcija, monet, vloga medicinske sestre.

ABSTRACT

Extracorporeal selective plasma purification is a procedure in which disease factors are removed from the patient's plasma and the purified plasma is returned to the patient. The first part of procedure is the same as the well-known plasmapheresis. In the second part of the process, the plasma is selectively purified of individual factors through additional filters

(imunoadsorption, monet). The procedure is performed by a suitably qualified dialysis nurse. Her tasks are: initially collecting relevant patient findings, accurately preparing the device, carefully and professionally performing the procedure according to the doctor's instructions, monitoring vital functions, prevention or appropriate reaction in the event of complications, knowledge of the disease states in which this procedure is performed, taking results according to the protocol, observing, documenting and reporting to the doctor. After the procedure is completed, if necessary replace "healthy" plasma factors. An individual approach is very important, because this method of plasma purification is performed in various diseases, which are present in various degrees of severity.

Keywords: apheresis, plasmapheresis, selective method, immunoadsorption, monet, role of nurse

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IZREDNE RAZMERE V ČASU POPLAV V DIALIZNEM CENTRU SLOVENJ GRADEC

Emergency conditions during floods in dialysis center Slovenj Gradec

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IZVLEČEK

Uvod: Naravne nesreče se dogajajo povsod po svetu. Slovenija je najdovzetnejša za poplave, zemeljske plazove, požare in potrese. Hudourniške poplave, ki so prizadele Slovenijo v avgustu 2023, je najbolj prizadelo Savinjsko in Koroško regijo. Mnogo ljudi je bilo ujetih v lastne domove in se ustrašila za svoja življenja. Med njimi so bile tudi osebe s končno ledvično odpovedjo, ki so v povprečju 3x tedensko odvisne od dializnega aparata, ki jim omogoča preživetje. Predstavili smo, kako je ta dan potekalo delo v centru za dializo v Splošni bolnišnici Slovenj Gradec. Z raziskavo, ki smo jo izvedli, smo želeli izvedeti, kako so bile osebe s končno ledvično odpovedjo zadovoljne z oskrbo v času izrednih razmer v času poplav, saj so nekatere bile poslane v drug dializni center ali se jim je dializa prestavila na drugi dan.

Metode: V našem raziskovalnem delu smo uporabili kvantitativen raziskovalni pristop. Podatki so bili pridobljeni s pomočjo anketnega vprašalnika preko spletne strani EnKa, jih analizirali ter jih predstavili v obliki grafov.

Rezultati: V anketi je sodelovalo 20 pacientov iz dializnega centra Slovenj Gradec, kateri so bili v poplavah najbolj prizadeti. Vsi anketni vprašalniki so bili popolno izpolnjeni. Večina anketiranih (70 %) je bilo moškega spola, ženskega 30 %. Povprečna starost je znašala v starostni skupini od 51 do 70 let. Največ anketiranih je prihajalo iz Dravske Doline (40 %), ki so bili začasno dializirani v UKC Maribor in sicer 3 dialize. Iz Mežiške Doline je bilo hospitaliziranih 30 % anketiranih, zaradi neprevoznih poti. Najdaljša hospitalizacija je traja 7 dni. V dializni center jih je največkrat pripeljalo reševalno vozilo in sicer polovica anketiranih, vojska je pripeljala 30 % anketiranih. Vsi anketirani so bili z organizacijo dializnega centra zadovoljni. Med poplavami je bilo zaznati največ tesnobe in občutka nemoči. Največji strah je predstavljala dostopnost poti do dializnega centra in nazaj domov.

Diskusija: Dan, ki nam je spremenil pogled na običajen delovni proces v dializnem centru se je zgodil na hladno avgustovsko jutro, 4.8.2023. Večina zaposlenih do dializnega centra zaradi neprevoznih poti ni prišla. Prišle so tri med. sestre, administratorka in dve zdravnici. Telefonska linija je bila obremenjena s klici prestrašenih svojcev, pacientov, reševalcev... Pri prevozu na dializni center se je vključila vojska s svojimi vozili in helikopterjem, civilna zaščita in gasilci. Pacienti so prihajali čez celoten dan, čas dialize se je prilagajal glede na razpoložljivost dializnih aparatov. V delovni proces se je vključila tudi administratorka, kot asistentka medicinski sestri. Pacienti kateri niso uspeli priti na svoj predviden termin dialize so bili telefonsko obveščeni in usmerjeni glede diete. V soboto je na delovno mesto že prišlo več medicinskega osebja in pacienti kateri na petek niso opravili dialize so jo opravili v soboto. Zaradi neprevoznih poti nazaj do doma so nekateri pacienti ostali hospitalizirani cca. 1 teden. Izredno stanje se je umirilo po enem tednu. Pacienti so bili prestrašeni, vendar hvaležni za trud vseh vpletenih.

Zaključek: Ugotovili smo, da se nekaj anketiranih ne zaveda resnosti svoje bolezni in kakšne posledice bi lahko prinesle poplave. V kolikor se v njihovo reševanje ne bi vključila vojska, gasilci, civilna zaščita, do dializnega centra ne bi prišli. Kateri pa se zavedajo resnosti situacije pa izražajo hvaležnost vsem vpletenim v upanju da se izredne razmere ne ponovijo.

Ključne besede: izredne razmere, poplave, organizacija dela, osebe s končno ledvično odpovedjo, dializa.

ABSTRACT

Introduction: Natural disasters occur worldwide, and Slovenia is particularly susceptible to floods, landslides, fires, and earthquakes. Flash floods in August 2023 significantly affected the Savinja and Carinthia regions. Many people were trapped in their homes, including individuals with end-stage renal failure who rely on dialysis machines three times a week for survival. We present the experience of the dialysis center at the General Hospital Slovenj Gradec during this crisis. Our research aimed to assess the satisfaction of end-stage renal patients with their care during the extraordinary circumstances caused by the floods, as some were sent to other dialysis centers or had their treatments rescheduled.

Methods: We employed a quantitative research approach. Data were collected through an online questionnaire on the EnKa platform, analyzed, and presented in graphical form.

Results: Twenty patients from the Slovenj Gradec dialysis center participated in the survey, with all questionnaires fully completed. Most respondents (70%) were male, while 30% were female. The average age fell within the 51–70 age group. The majority of participants (40%) came from the Drava Valley and were temporarily dialyzed at the University Medical Centre Maribor (three sessions). Due to impassable roads, 30% of respondents from the Mežica Valley were hospitalized. The longest hospitalization lasted seven days. Ambulances transported half of the patients to the dialysis center, while the military transported 30%. Overall, respondents were satisfied with the organization of the dialysis center. During the floods, anxiety and helplessness were prevalent, with the greatest fear being access to and from the dialysis center.

Discussion: On a cold morning of August 4, 2023, the usual workflow at the dialysis center was disrupted. Most staff couldn't reach the center due to impassable roads. Only three nurses, an administrator, and two doctors made it. The phone lines were flooded with calls from anxious relatives, patients, and rescuers. The military, civil protection, and firefighters assisted in transporting patients to the center using vehicles and helicopters. Dialysis times were adjusted based on machine availability. An administrative assistant helped the nursing staff. Patients who missed their scheduled dialysis were informed by phone and given dietary guidance. On Saturday, additional medical staff arrived, and patients who missed Friday's dialysis received treatment. Some patients remained hospitalized for about a week due to transportation challenges. The emergency situation gradually improved after a week. Despite fear, patients expressed gratitude for everyone's efforts.

Conclusion: Our findings highlight that some respondents underestimated the severity of their condition and the potential consequences of floods. Without the involvement of the military, firefighters, and civil protection, patients wouldn't have reached the dialysis center. Those aware of the situation expressed gratitude, hoping such extraordinary circumstances won't recur.

Keywords: emergency conditions, floods, work organization, person with end stage kidney disease, dialysis.



Vir: Pacient



Vir: zdravstveno-reševalni center Koroške

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ERGONOMIJA DELOVNEGA OKOLJA V ZDRAVSTVENI NEGI - ALI JE KAJ NOVEGA?

Ergonomics of the working environment in healthcare - is it anything new?

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IZVLEČEK

Neizpodbitno dejstvo je, da na zdravje ljudi neposredno vpliva delovno okolje. Vplivi delovnega okolja na zdravje ljudi so raznovrstni. Njihova značilnost je kumulativnost skozi čas. Vplivi delovnega okolja na zdravje posameznika so pogojeni z naravo dela, delovnega okolja v ožjem smislu in specifičnih značilnosti dela. Velik del obremenitev predstavljajo neposredni fizikalni vplivi, ki so v največji meri pogojeni z ergonomskimi pogoji dela. Ali so se ergonomski pogoji dela v zdravstveni negi skozi čas kaj spremenili, izboljšali? Podatki NIJZ o razlogih bolniškega staleža zaradi kostno mišičnih obolenj v sektorju zdravstvo, v primerjavi med letoma 2016 in 2023 kažejo, da temu ni tako. Odstotek bolniškega staleža zaradi kostno mišičnih obolenj v sektorju zdravstva je bil v letu 2016 za 0,14 % točke nižji. Iz 0,95% v letu 2016 je zrasel na 1,09% v letu 2023. Glede na posodabljanje delovnega okolja in delovne opreme v slovenskih bolnišnicah na splošno, bi bilo pričakovati drugačen rezultat. Razloge je verjetno potrebno iskati v širšem kontekstu nastanka kostno mišičnih obolenj in ne le fizikalnih vplivih dela. Eni pomembnejših so tudi psihosocialni dejavniki. Za primerjavo navajam podatek odstotka bolniškega staleža zaradi *Duševne in vedenjske motnje (F00-F99)* med letoma 2016 in 2023. Ta je za malenkost višji leta 2023; za 0,08 odstotne točke, kar je zanemarljivo, vendar ni zaznati trenda upadanja, kar si bi želeli in tudi pričakovali. Med pomembnejšimi organizacijskimi in psihosocialnimi dejavniki je potrebno navesti: naporno delo, nezadosten nadzor nad izvajanjem nalog, in nizka stopnja samostojnosti, nizka raven zadovoljstva na delovnem mestu, ponavljajoče se enolično delo s hitrim tempom, premajhna podpora sodelavcev, nadrejenih in vodstvenih delavcev. Kljub vsemu se nam poraja pomislek glede pravilne uporabe opreme, ki bi morala v veliki meri zmanjševati negativne fizikalne vplive. Zato v članku raziščemo kako in v kolikšni meri je osebje v zdravstveni negi seznanjeno o pravilni uporabi pripomočkov pri delu in tudi, ali pri vsakodnevnem delu to upošteva.

Če poskušamo odgovoriti na začetno vprašanje, ali je kaj novega na področju ergonomije, je odgovor, da. Novejša in delu prilagojena je osnovna delovna oprema v zdravstveni negi. Vprašanje sicer je, kaj se dogaja na področju psihosocialnih obremenitev, odnosov, odgovornosti, in predvsem obremenitev zaradi pomanjkanja osebja. Zato je zelo pomembno vprašanje, ali je osebje seznanjeno, ali je dovolj osveščeno in motivirano za pravilno delo v smislu zmanjševanja negativnih fizikalnih obremenitev.

Ključne besede: zdravje zaposlenih, kostno mišična obolenja, medicinska sestra, delovna oprema, ergonomska načela dela.

ABSTRACT

It is indisputable fact, that people's health is directly affected by the working environment. The effects of the working environment on people's health are diverse. Their characteristic is cumulativeness over time. The effects of the work environment on an individual's health are conditioned by the nature of the work, the work environment in the narrower sense, and the specific characteristics of the work. A large part of the workloads is represented by direct physical influences, which are conditioned mostly by ergonomic working conditions. Have the ergonomic working conditions in nursing changed or improved over time? NIJZ data on the reasons for the number of patients due to musculoskeletal diseases in the healthcare sector, compared between 2016 and 2023, show that this is not the case. In 2016, the percentage of patients due to musculoskeletal diseases in the healthcare sector was 0.14% lower. It grew from 0.95% in 2016 to 1.09% in 2023. Considering the modernization of the work environment and work equipment in Slovenian hospitals in general, a different result would be expected. It is probably necessary to look for the reasons in the wider context of the occurrence of bone and muscle diseases and not only in the physical effects of work. Psychosocial factors are also one of the more important. For comparison, let's see percentage of patients due to *Mental and behavioral disorders (F00-F99)* between 2016 and 2023. Percentage is slightly higher in 2023; by 0.08 percentage points, which is negligible, but there is no discernible downward trend, what we would like and expect. Among the more important organizational and psychosocial factors, it is necessary to mention: hard work, insufficient control over the execution of tasks, and a low level of independence, a low level of job satisfaction, repeated and monotonous work at a fast pace, insufficient support from colleagues, superiors and managers. Despite everything, we are concerned about the correct use of equipment, which should largely reduce negative physical

impacts. Therefore, in the article we investigate how and to what extent nursing staff are aware of the correct use of aids at work, and also, if they follow those guidelines in their daily work.

If we try to answer the initial question of whether there is anything new in the field of ergonomics, the answer is yes. The basic work equipment in nursing is newer and adapted to the work. The question, however, is what is happening in the area of psychosocial burdens, relationships, responsibilities, and above all, due to a lack of staff. Therefore, it is a very important question whether the staff is known with guidelines, whether they are sufficiently aware and motivated to work correctly in terms of reducing negative physical loads.

Keywords: employee health, musculoskeletal disease, nurse, work equipment, ergonomic principles of work.

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DELOVNA UNIFORMA MEDICINSKE SESTRE

Nurse's uniform

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IZVLEČEK

Avtor v članku kronološko opisuje razvoj delovne uniforme od pričetka šolanja do upokojitve (1966-2013). V srednji šoli so dobili samo eno uniformo, ki so jo morali prati in škrobiti sami, vsak vikend, do konca šolanja. Od leta 1971 avtor prične z delom v KON, v Centru za dializo, v UKC Ljubljana. Imeli so dve uniformi, ki so jih še vedno morali prati sami. Leta 1974 so dobili nove delovne uniforme v rdeči barvi, ki so jih prali v pralnici UKC. Kmalu so te uniforme dobile velike madeže od dezinfekcijskih sredstev za dializne monitorje, ki so kazili izgled urejenosti medicinske sestre. Po letu 1984 se je odprl Peritex v Trzinu, ki je prevzel celotno skrb za nove uniforme, njihovo pranje, likanje in dostavo v UKC. Zaposleni so dobili po dve uniformi z možnostjo menjave tudi med službo. Izpolnjeni standardi za delovno uniformo so medicinski sestri dali: občutek urejenosti, sigurnosti in pripadnosti, pomoč pri ohranjanju lastne integritete, profesionalno držo ter osebno zadovoljstvo. Delovna uniforma je postala sestavni del njihovega poklica. Zagotavlja jim možnost prostega gibanja v zdravstvenih ustanovah. Nosijo jih lahko ves čas aktivnega dela v zdravstvu. Postala je nepogrešljiv del njih samih, imajo jo radi in jo bodo pogrešali, ko jo bodo morali dokončno oddati. Čeprav se tega niso zavedali, tisti trenutek, ko se razdolžijo z delovno uniformo, niso več medicinske sestre. Ko delovne uniforme ni več, ki jim je toliko let služila in dajala njihovo zunanjo podobo. Zato se delovna uniforma nosi častno in s spoštovanjem, ker ta govori o urejenosti medicinske sestri in pripadnosti ustanovi v kateri dela.

Ključne besede: delovna uniforma, medicinska sestra, dializa.

ABSTRACT

In this article, the author describes the role of the nurse's uniform. In 1971, the author started working at the Dialysis Centre of the UKC Ljubljana. They had two uniforms, which they still had to wash themselves. In 1974 they were given new uniforms in red, which were washed in the UKC laundry. Soon these uniforms got big stains from the dialysis monitor disinfectants,

which spoiled the appearance of the nurse's neatness. After 1984, Peritex opened in Trzin, which took over the whole care of the new uniforms, washing, ironing and delivery to the UKC. Employees were given two uniforms each, with the possibility of changing them even during the service. The uniform standards has given the nurses: a sense of order, security and belonging, support in maintaining their own integrity, a professional attitude and personal satisfaction. The work uniform has become an integral part of their profession. It provides them with the opportunity to move freely within healthcare facilities. They may wear them throughout their active working life in the healthcare sector. It has become an indispensable part of who they are, they love it and will miss it when they finally have to give it up. Although they may not have realised it, the Keywords: work uniform, nurse, dialysis.

Sources: Professional image of health and midwifery care providers 2021, author's own experience

moment they part with their work uniform, they are no longer nurses. When the working uniform is gone, it has served them for so many years and honour and respect, because it speaks of the nurse's commitment and belonging even to their outward appearance. Sources: The Professional Uniform is therefore worn with honour and respect, because it speaks of the nurse's commitment and belonging to the institution in which she works.

Keywords: work uniform, nurse, dialysis.

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OBLIKOVANJE NACIONALNIH PROTOKOLOV IZ PODROČJA NEFROLOGIJE, DIALIZE IN TRANSPLANTACIJE

Creation of national protocols in the field of nephrology, dialysis and transplantation

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IZVLEČEK

Strokovna sekcija je že leta 2008 zaznala potrebo po oblikovanju enotnih strokovnih smernic za doseganje optimalne zdravstvene oskrbe pacientov na nadomestnem zdravljenju s hemodializo, peritonealno dializo in transplantacijo ledvice. Za doseg cilja je bila oblikovana delovna skupina, ki je najprej začela pripravljati negovalne standarde na področju peritonealne dialize. Leta 2015 so bili standardi (strokovne smernice) preoblikovani in sprejeti kot nacionalni protokoli pri Zbornici-Zvezi. Delo skupine se je nadaljevalo s pripravo nacionalnih protokolov na področju hemodialize. V prispevku je prikazana kronološka pot oblikovanja nacionalnih protokolov; od standardov, strokovnih smernic do nacionalnih protokolov; od leta 2008 do danes.

Ključne besede: nacionalni protokol, hemodializa, peritonealna dializa.

ABSTRACT

Already in 2008, the expert section recognized the need to create uniform professional guidelines to achieve optimal medical care for patients on replacement treatment with hemodialysis, peritoneal dialysis and kidney transplantation. In order to achieve the goal, a working group was formed, which first started preparing nursing standards in the field of peritoneal dialysis. In 2015, the standards (professional guidelines) were reformulated and accepted as national protocols by the Chamber-Union. The work of the group continued with the preparation of national protocols in the field of hemodialysis. The article shows the chronological path of the creation of national protocols; from standards, professional guidelines to national protocols; from 2008 until today.

Key words: national protocol, hemodialysis.

KADROVSKI STANDARDI IN NORMATIVI V ZDRAVSTVENI NEGI KOT DEL OBLIKOVANJA ZDRAVSTVENE POLITIKE

Personnel standards and norms in nursing as part of health policy formulation

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IZVLEČEK

Uvod: Zdravje kot najvišje ovrednotena blaginja, tako na individualnem kot družbenem nivoju potrebuje ukrepe za spodbujanje varovanja zdravja, krepitev zdravja in zmanjševanje razlik v zdravju med prebivalstvom Republike Slovenije. Od leta 1992, ko je bil postavljen temeljni zdravstveni sistem, ki je državljanom zagotavljal dostopno in kakovostno zdravstveno varstvo pa do danes Slovenija ni naredila večjih sistemskih sprememb. Sistem je živ spremembe pa nujno potrebne zaradi precej drugačne demografske strukture in napredka v medicini, ki seveda dviguje število novih diagnostično terapevtskih postopkov in profilov zdravstvenih delavcev. Tudi Evropska unija od Slovenije zahteva reformo zdravstvenega sistema, med drugim zaradi spoprijemanja z enim od največjih porastov (od vseh držav članic) socialnih izdatkov, ki so neposredno povezani s staranjem prebivalstva.

Diskusija: Kadrovske standardi in normativi v zdravstveni in babiški negi so se do leta 2007 določali na izkustveni ravni. Temeljili so na splošnem kriteriju števila bolniških postelj in finančne razpoložljivosti, kar je bilo v primerjavi z razvitim svetom nesprejemljivo. Leta 2008 je bil na podlagi *Slovenske kategorizacije zahtevnosti zdravstvene nege*, ki jo je kot orodje za izračun sprejel Zdravstveni svet, oblikovan dokument «Poklicne aktivnosti in kompetence v zdravstveni in babiški negi».

Nedvoumno je dokazano, da sta kakovost in varnost zdravstvenih storitev močno odvisna tudi od števila in izobrazbe zaposlenih v zdravstveni negi. Kadrovske standardi in normativi so tako neposredno močno povezani z obremenitvami zaposlenih v zdravstveni negi in temeljni predmet usklajevanja zdravstvene politike med reprezentativnimi sindikati in ministrstvi.

Vodenje ustanov v državi ni poenoteno, česar posledice so ogromne razlike v organiziranju in upravljanju. Najnovejša publikacija za poenoteno oblikovanje upravljanja med različnimi organizacijami v zdravstveni negi v Sloveniji je: Kadrovski standardi in normativi v zdravstveni in babiški negi izdano leta 2021 pri Zbornici zdravstvene in babiške nege Slovenije – Zveza strokovnih društev medicinskih sester in zdravstvenih tehnikov Slovenije.

V Sloveniji več avtorjev ocenjuje razmere v zdravstvenem varstvu kot kritične, med drugim zaradi uvajanja zasebne dejavnosti, timskega dela, medosebnih odnosov, izobraževanja in slabe pravne ureditve. V luči oblikovanja zdravstvenih politik in posledičnega vpliva na skupino zaposleno v zdravstveni negi, se je potrebno usmeriti k izogibu še večje kadrovske krize s krepitvijo dolgoročnega zadovoljstva, možnosti osebnega razvoja, stalnostjo zaposlitve, višino plačila, delovno motivacijo in nenazadnje občutkom pripadnosti organizaciji.

Zaključek: Pri oblikovanju reform zdravstvenega varstva so ključne vloge zavzele vplivne interesne skupine predvsem iz Zdravniške zbornice, Lekarniške zbornice, Zavoda za zdravstveno zavarovanje Slovenije in predstavnikov države. Lik medicinske sestre pa v splošnem daje vtis tihe, neopazne, uniformirane osebe, ki opravlja svoje naloge in je neprekinjeno na razpolago človeku v njegovih najsubtilnejših življenjskih trenutkih. Toda ravno to, da izhaja iz srčice sistema bi z aktivnejšo vključitvijo te poklicne skupine v oblikovanje zdravstvene politike prineslo največ koristi uporabniku zdravstvenih storitev. Zato je nujna rešitev na sistemskem nivoju s povečanjem moči managementa in pomenom izobraževanja, posledično pa večjo politično močjo zaposlenih v zdravstveni negi.

Ključne besede: kadrovski standardi, kadrovski normativi, zdravstvena politika

ABSTRACT

Introduction: Health as the highest valued well-being, both at the individual and societal level, needs measures to promote health protection, health promotion and reduction of health inequalities among the population of the Republic of Slovenia. Since 1992, when the basic health system was established to provide citizens with accessible and quality healthcare, Slovenia has not made any major systemic changes. The system is alive and changes are urgently needed due to a much different demographic structure and advances in medicine, which naturally increase the number of new diagnostic and therapeutic procedures and profiles of health professionals. The European Union is also demanding that Slovenia reform its

healthcare system, not least to cope with one of the largest increases (of any Member State) in social expenditure, which is directly linked to the ageing of the population.

Discussion: Until 2007, staffing standards and norms in nursing and midwifery were set on an experiential basis. They were based on the general criterion of the number of hospital beds and financial availability, which was unacceptable compared to the developed countries. In 2008, the document "Professional activities and competences in nursing and midwifery" was developed on the basis of the Slovenian categorisation of the complexity of nursing care, which was adopted as a calculation tool by the Health Council.

It has been proven unequivocally that the quality and safety of health care services are also strongly influenced by the number and education of nursing staff. Staffing standards and norms are thus strongly linked to the workload of nursing staff and are a fundamental subject of health policy coordination between representative trade unions and ministries. The management of institutions in the country is not uniform, resulting in huge differences in organisation and management. The most recent publication for a unified management design between the different organisations in nursing in Slovenia is: Staffing Standards and Norms in Nursing and Midwifery Care, published in 2021 by the Nurses and midwifery association of Slovenia.

In Slovenia, several authors assess the situation in health care as critical, among others due to the introduction of private activity, teamwork, interpersonal relations, education and poor regulation.

Regarding the health policy-making and the resulting impact on the nursing workforce, the focus should be on avoiding an even greater staffing crisis by strengthening long-term professional satisfaction, personal development opportunities, job stability, pay, work motivation and a sense of belonging to the organisation.

Conclusion: Influential stakeholders, mainly from the Medical Chamber of Slovenia, Slovene Chamber of Pharmacy, the Health Insurance Institute of Slovenia and representatives of the state, have played key roles in the design of healthcare reforms. The figure of the nurse, however, generally gives the impression of a silent, inconspicuous, uniformed person who carries out her tasks and is constantly at the disposal of the person in the most subtle moments of life. But it is precisely by coming from the heart of the system that the user of health services would benefit most from the more active involvement of this professional group in health

policy-making. A system-level solution is therefore urgently needed, with greater management power and education as a result of greater political power for nursing staff.

Keywords: staffing standards, staffing norms, health policy

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ORGANIZACIJA DELA NA KLINIČNEM ODDELKU ZA NEFROLOGIJO PEDIATRIČNE KLINIKE V LJUBLJANI

Work organisation in the Clinical Department of Nephrology at the Ljubljana Pediatric Clinic

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IZVLEČEK

Uvod: Na kliničnem oddelku (KO) za nefrologijo Pediatrične klinike UKC Ljubljana so obravnavani otroci z boleznimi sečil. Izvajajo se preventivni, diagnostično-terapevtski postopki ter zdravstveno vzgojno delo. Za širše ljubljansko področje se ambulantno in bolnišnično izvajajo storitve na sekundarnem nivoju, na terciarnem nivoju pa se obravnavajo dojenčki, otroci in mladostniki z boleznimi sečil iz celotne države.

Diskusija: Znotraj KO za nefrologijo delujejo: nefrološka ambulanta (specialistični pregledi), funkcionalna diagnostika (urodinamika, zdravljenje mikcijskih motenj z biološko povratno zvezo-biofeedback, 48-urno merjenje krvnega tlaka-holter) hospitalni oddelek (od zdravljenja preprostih okužb sečil do nadomestnih oblik zdravljenja končne ledvične odpovedi-peritonealna dializa, obravnava po transplantaciji) in Center za otroško dializo in transplantacijo (hemodializa in uvrstitev na transplantacijsko listo).

Obravnavani so otroci z okužbami sečil, prirojenimi nepravilnostmi sečil, motnjami mikcije, arterijsko hipertenzijo, ledvičnimi kamni, glomerularnimi ter tubularnimi boleznimi, cistično boleznijo ledvic in končno odpovedjo ledvic.

KO za nefrologijo Pediatrične klinike v Ljubljani edini v Sloveniji izvaja naslednje zdravstvene storitve: multidisciplinarno vodenje otrok s kronično ledvično boleznijo; izvajanje nadomestnega zdravljenja končne ledvične odpovedi; diagnostično terapevtski postopki pri otrocih s trombotičnimi mikroangiopatijami, trombotično trombocitopenično purpuro in drugimi; uvrstitev otrok na transplantacijsko listo in vodenje otrok po transplantaciji ledvice.

Zaključek: Za celostno obravnavo otrok, ki imajo katero od širokega razpona nefroloških bolezni je medicinska sestra pomemben del tima pri diagnostično terapevtski obravnavi. Na Pediatrični kliniki s sodobnimi zdravstveno negovalnimi pristopi izboljšujemo in izpopolnjujemo pristope k pacientom z najhujšimi boleznimi ledvic v Sloveniji. S tem dvigujemo ne samo kakovost obravnave pacientov, pač pa tudi njihovega življenja in razvoja.

Ključne besede: nefrologija, dializa, transplantacija, otroci

ABSTRACT

Introduction: Children with urinary tract diseases are treated at the Clinical Department of Nephrology at the Paediatric Clinic, UMC Ljubljana. Preventive, diagnostic and therapeutic procedures, as well as health education, are offered. Treatment at secondary level is provided for the wider Ljubljana area, while treatment at tertiary level is generally available for children of any age from whole over the country.

Discussion: Within the Nephrology Department there are: nephrology specialist examinations, functional diagnostics (urodynamics, treatment of micturition disorders with biofeedback, 48-hour blood pressure measurement-holter), hospital unit (from the treatment of simple urinary tract infections to alternative forms of treatment of end-stage renal failure-peritoneal dialysis and post-transplant treatment) and the Paediatric Dialysis and Transplantation Centre (haemodialysis and transplant listing).

Children with urinary tract infections, congenital urinary tract abnormalities, micturition disorders, arterial hypertension, kidney stones, glomerular and tubular diseases, cystic kidney disease and end-stage renal failure are treated.

The Nephrology Unit of the Paediatric Clinic in Ljubljana is the only unit in the Slovenia to provide the following medical services: multidisciplinary management of children with chronic kidney disease; replacement therapy for end-stage renal failure; diagnostic and therapeutic procedures for children with thrombotic microangiopathies, thrombotic thrombocytopenic purpura and others; inclusion of children on the kidney transplant list; and management of children after kidney transplantation.

Conclusion: To provide holistic care for children with a wide range of nephrological disorders, the nurse is an important part of the team in the diagnostic and therapeutic management. Using

modern nursing approaches, the Paediatric Clinic is improving and refining its practice for patients with the most severe kidney diseases in Slovenia. This improves not only the quality of care for patients, but also their lives and development.

Keywords: nephrology, dialysis, transplantation, children.

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VPLIV SODOBNIH TEHNOLOGIJ NA OBVLADOVANJE ZNANJA IN ORGANIZACIJO DELA NA ODDELKU ZA DIALIZO UKC MARIBOR

The influence of modern technologies on knowledge management and work organisation in the dialysis department of UKC maribor

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IZVLEČEK

Uvod: V poplavi sodobnih tehnologij se znajdemo pred izzivi, kako le-te uspešno uvesti v prakso, da bodo varne za uporabo, kar pomembno vpliva na obvladovanje znanja v zdravstvu. Količina ter specifičnost informacij v našem primeru pomenijo znanje. Vodenje in urejanje omenjenega področja pomeni, da bodo te informacije uporabljene na pravi način ob pravem času. Doseganje takšnega standarda pa v praksi pomeni učinkovito, varno in celostno obravnavo pacienta, kar pa je cilj in vrednota vseh zdravstvenih delavcev.

Metode: V teoretičnem delu smo uporabili deskriptivno (opisno) metodo dela z narativnim pregledom literature. Empirični del raziskave smo izvedli s pomočjo anketnih vprašalnikov, ki jih je izpolnilo 28 zaposlenih na Oddelku za dializo Univerzitetnega kliničnega centra Maribor. Raziskava je enocentrična. Analiza pridobljenih rezultatov je bila opravljena s pomočjo programa Excel.

Rezultati: V raziskavi je sodelovalo 28 oseb, od tega 5 moških (17,9%) in 23 žensk (82,1%). Povprečna starost anketirancev je bila 40let. Novim trendom pogosto sledi 14(50%) anketiranih, vedno 8(28,6%), občasno 5 (17,9%), 1(3,57%). Največji motiv za izobraževanje so pri 52,5% anketiranih potrebe na delovnem mestu, sledijo osebni interesi v 45% in zahteve nadrejenega pri 2,5% anketiranih. Velik delež anketiranih (38,1%) vidi največjo oviro za izvajanje obvladovanja znanja na delovnem mestu v pomanjkanju razumevanja tega procesa in njegovih koristi za organizacijo.

Diskusija: Starejše medicinske sestre z več leti delovnih izkušenj so pri svojem delu bolj avtonomne. Zaposlene za izobraževanje najpogosteje motivirajo potrebe na delovnem mestu

ter osebni interesi, največ stresa na delovnem mestu pa zaposlenim povzroča pomanjkanje kadra ter slaba organizacija dela.

Zaključek: Uvedba specialnih znanj na področju hemodialize bi pomembno doprinesla k kakovosti dela na dializnem oddelku, saj zaradi specifičnosti v sklopu formalnega izobraževanja ne pridobimo dovolj znanja na tem področju. Zaradi konstantnega pojavljanja novih tehnologij na področju hemodializnega zdravljenja je potrebno pogosto izobraževanje, ki bi ga bolje urejali s pomočjo dobrega obvladovanja znanja.

Ključne besede: obvladovanje znanja, sodobne tehnologije, dializno zdravljenje.

ABSTRACT

Introduction: In the flood of modern technologies, we are faced with the challenge of how to successfully implement them in practise so that they are safe to use, which has significant implications for the mastery of knowledge in healthcare. In our case, the quantity and specificity of information means knowledge. Mastering and managing this area means that this information is used in the right way at the right time. Achieving such a standard in practise means efficient, safe and holistic treatment of the patient, which is the goal and value of all healthcare professionals.

Methods: In the theoretical part, we used a descriptive working method with a narrative review of the literature. The empirical part of the study was conducted with the help of questionnaires filled in by 28 employees of the Dialysis department of the University Medical Centre Maribor. The study is single-center. The analysis of the results obtained was carried out using the Excel programme.

Results: 28 people took part in the survey, 5 men (17.9%) and 23 women (82.1%). The average age of the respondents was 40 years. New trends are often followed by 14 (50%) of the respondents, 8 (28.6%) always, 5 (17.9%) occasionally. The most important motive for further training for 52.5% of respondents is the needs of the workplace, followed by personal interests for 45% and the requirements of the manager for 2.5% of respondents. A large proportion of respondents (38.1%) see a lack of understanding of the process and its benefits for the organisation as the biggest obstacle to the introduction of knowledge management in the workplace.

Discussion: The main findings of the research are that older nurses with more years of work experience are more autonomous in their work. Employees are most often motivated by

workplace needs and personal interests, while most workplace stress is caused by staff shortages and poor work organisation.

Conclusion: The introduction of specialised knowledge in the field of haemodialysis would significantly contribute to the quality of work in the dialysis department, because due to the specificity of formal education we do not acquire enough knowledge in this field. Due to the constant appearance of new technologies in the field of hemodialysis treatment, frequent further training is necessary, which could be better organised with the help of good knowledge management.

Keywords: knowledge management, modern technologies, dialysis treatment.

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ASSESSMENT, MANAGEMENT AND EVALUATION OF UREMIC SYMPTOMS – A PIVOTAL ROLE FOR NURSES

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ABSTRACT

The symptom burden in advanced kidney disease is comparable to that of advanced cancer, underscoring the need for a multifaceted response from healthcare providers. Innovative strategies that incorporate symptom management into nursing practice are essential, as is the recognition of the emotional and physical challenges faced by informal caregivers. Addressing the complex symptom profiles of advanced kidney disease through tailored interventions can significantly improve the quality of life for both patients and their caregivers, highlighting the importance of prioritizing effective assessment and management strategies in healthcare.

KAJ MORA MEDICINSKA SESTRA VEDETI O PERITONEALNI DIALIZI?

What nurses need know about peritoneal dialysis?

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IZVLEČEK

Peritonealna dializa (PD) je, poleg hemodialize in presaditve ledvic, ena od možnosti nadomestnega zdravljenja končne odpovedi ledvic, čeprav se uporablja redkeje, kljub temu da je večina bolnikov zanjo primerna. Ključno je, da so bolniki ob izbiri zdravljenja dobro informirani o vseh razpoložljivih možnostih, saj lahko le tako sprejmejo premišljeno odločitev. Zdravstveno osebje mora zato temeljito poznati vse oblike nadomestnega zdravljenja, skupaj z njihovimi prednostmi in slabostmi, da lahko bolnikom ustrezno svetuje. Pri PD peritonej, membrana, ki obdaja peritonealno votlino, deluje kot polprepustna membrana, skozi katero potekata ultrafiltracija in odstranjevanje topljencev. Dostop do peritonealne votline omogoča peritonealni kateter, ki ga lahko vstavimo bodisi kirurško bodisi perkutano. Obstajata dva načina izvajanja PD:

1. **Kontinuirana ambulantna peritonealna dializa (CAPD):** Bolnik večkrat dnevno ročno vtoči svežo dializno raztopino v peritonealno votlino in nato iztoči dializat.
2. **Avtomatizirana peritonealna dializa (APD):** Aparat samodejno izvaja menjave dializne raztopine v določenih časovnih intervalih.

PD se praviloma izvaja na domu, kar bolniku omogoča večjo svobodo, neodvisnost in manjše prehranske omejitve, kot so manj stroga pravila glede vnosa soli, tekočin in večji vnos živil, ki vsebujejo kalij. Ker PD poteka neprekinjeno, ne prihaja do večjih nihanj v volemiji in elektrolitih, kar zmanjša simptome, kot sta utrujenost in izčrpanost. Največja slabost PD je njena časovna omejenost, saj le redki bolniki ostanejo na tej metodi več kot 10 let. Najpogostejši zapleti PD so okužbe, kot sta peritonitis in okužba izstopišča katetra, vendar je njihova absolutna pogostnost relativno majhna. V mnogih centrih, tudi v našem, večina bolnikov nikoli ne doživi peritonitisa. Ne infekcijski zapleti so redkejši. Le s celovitim poznavanjem vseh razpoložljivih možnosti zdravljenja lahko skupaj z bolnikom izberemo tisto, ki je najbolj

primerna za posameznikovo zdravstveno stanje in kakovost življenja. PD ponuja učinkovito in prilagodljivo možnost za bolnike s končno odpovedjo ledvic, še posebej za tiste, ki cenijo neodvisnost in možnost zdravljenja v domačem okolju.

ABSTRACT

Peritoneal dialysis (PD) is one of the treatment options for end-stage renal failure, alongside hemodialysis and kidney transplantation. Though suitable for most patients, PD is underutilized. Patients must be informed of all treatment options to make the best decision. Therefore healthcare staff must thoroughly understand all replacement therapies, including their pros and cons, to provide appropriate guidance.

In PD, the peritoneum—a membrane lining the abdominal cavity—acts as a semi-permeable membrane, enabling ultrafiltration and solute removal. A catheter inserted surgically or percutaneously allows access to the peritoneal cavity. There are two main PD methods:

- **Continuous Ambulatory Peritoneal Dialysis (CAPD):** The patient manually introduces fresh dialysis solution into the peritoneal cavity several times daily and drains the dialysate.
- **Automated Peritoneal Dialysis (APD):** A machine performs solution exchanges automatically at set intervals.

PD is typically performed at home, giving patients greater independence and flexibility. Also, there are fewer dietary restrictions, such as more lenient guidelines on salt, fluid, and potassium intake. Since PD is continuous, it leads to fewer fluctuations in fluid and electrolytes, reducing symptoms like fatigue. However, the effectiveness of PD tends to diminish over time, with few patients remaining on the therapy beyond 10 years. The most common complications include infections like peritonitis and catheter exit-site infections, though these are relatively rare.

With comprehensive knowledge of treatment options, healthcare providers and patients can reach a shared decision about the most suitable therapy based on their individual needs and lifestyle. PD is an effective and flexible option, particularly for patients who value independence and home-based care.

PERITONEALNA DIALIZA PRI OTROCIH

Peritoneal dialysis in children

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IZVLEČEK

Uvod: Tudi pri otrocih lahko pride do nepopravljive okvare ledvičnega tkiva – končne ledvične odpovedi (KLO) in posledično do potrebe po nadomestnem zdravljenju. V primerjavi z odraslo populacijo, kjer se različne oblike kronične ledvične bolezni (KLB) pojavljajo v približno 10%, je v otroški dobi to izredno redka diagnoza. Priprave na nadomestno zdravljenje se pričnejo v četrti od petih faz KLB, ko glomerulna filtracija pade pod 30 ml/min na 1,73 m². Prva in relativno preprosta izbira nadomestnega zdravljenja KLO pri majhnih otrocih je peritonealna dializa (PD), še bolj ugodna alternativa pa je presaditev ledvice. Kronična hemodializa (HD) se pri otroku izvaja, če prvi dve možnosti iz kakršnegakoli razloga nista izvedljivi. Če pacient začne z dializnim zdravljenjem že v mladosti, je možnost, da se tekom življenja sreča z vsemi tremi oblikami nadomestnega zdravljenja KLO precej velika.

Diskusija: V Sloveniji vsa nadomestna zdravljenja in spremljajoče prilagoditve KLB pri otrocih in mladostnikih izvajamo ter poučujemo na Kliničnem oddelku za nefrologijo Pediatrične klinike v Ljubljani. Ko je otrok na kronični PD je v zdravljenje vključena tudi bolnikova družina, ki je temeljito poučena in naučena o postopkih izvajanja PD in obvladovanja spremljajočih zapletov. Starši oz. otrokovi skrbniki izvajajo asistirano PD na domu.

PD je učinkovita in najnežnejša metoda nadomestnega zdravljenja KLB, saj omogoča, da otrok največ časa preživi v domačem okolju. Gre tudi za najcenejšo obliko zdravljenja KLO z redkimi kontraindikacijami, ki ob enem pomembno ohranja ledvično funkcijo. Pacient v bolnišnico prihaja na redne mesečne kontrolne preglede in ob morebitnih zapletih. Ta metoda zahteva tudi manj dietnih in tekočinskih omejitev. Počutje pacientov je bolj stabilno kot pri HD, zaradi kontinuiranega odvzema odvečne tekočine ter presnovkov iz telesa. Predpis zdravljenja je individualen za vsakega pediatričnega pacienta, ki se vedno obravnava multidisciplinarno.

Poznamo dve obliki PD. To sta kontinuirana ambulantna PD (CAPD) in avtomatizirana PD (APD). Za izvajanje je potreben dializni pristop-stalni peritonealni kateter, ki je perkutano vstavljen v najnižji del trebušne votline. Največjo težavo predstavlja nevarnost razvoja peritonitisa, ki lahko vodi v slabšo funkcijo peritonealne membrane in nezadostno dializo. Posledično je nujna sprememba oblike dializnega zdravljenja. Pri otrocih, ki se zdravijo s PD so odsvetovane dejavnosti, ob katerih bi lahko prišlo do poškodbe katetra, sicer pa resnejših omejitev pri fizični dejavnosti ni. Velika je splošna obremenitev družine, ki lahko vodi do izgorelosti. PD je manj učinkovita kot HD, pušča zarastline po operaciji v trebuhu, okvare žilja peritoneja, povzroča izgubo beljakovin in oteženo psihosocialno situacijo.

Zaključek: PD predstavlja predvsem za paciente mlajše od 5 let in njegovo družino več prostega časa in svobode ter za izvajanje ni potreben žilni pristop in antikoagulacijska terapija. V primerjavi s HD sta okrevanje otrok in vključitev v običajno okolje boljša.

Ključne besede: peritonealna dializa, otroci.

ABSTRACT

Introduction: Even in children, irreversible damage to kidney tissue - end-stage renal failure (ESRD) - can occur, resulting in the need for replacement therapy. Compared to the adult population, where various forms of chronic kidney disease (CKD) occur in about 10%, it is an extremely rare diagnosis in childhood. Preparation for replacement therapy starts in the fourth of the five stages of CKD when glomerular filtration rate falls below 30 ml/min per 1.73 m². The first and relatively simple choice of replacement therapy for CKD in young children is peritoneal dialysis (PD), but kidney transplantation is even more favourable alternative. Chronic haemodialysis (HD) is performed in the child if the first two options are not feasible for any reason. If the patient starts dialysis treatment at a young age, the chances of experience all three forms of CKD replacement therapy during his/her lifetime are quite high.

Discussion: In Slovenia, all replacement therapies and accompanying adjustments for CKD in children and adolescents are performed and taught at the Clinical Department of Nephrology of the Paediatric Clinic in Ljubljana. When a child is on chronic PD, the patient's family is also involved in the treatment and is thoroughly educated and taught about the procedures of PD and the management of the accompanying complications. The parents or the child's guardians carry out the assisted PD at home.

PD is an effective and the least expensive method of alternative treatment for ESRD, as it allows the child to spend the maximum amount of time in the home environment. It is also the cheapest form of treatment for CKD with few contraindications, while significantly preserving renal function. The patient comes to the hospital for regular monthly follow-ups and for any complications. This method also requires fewer dietary and fluid restrictions. Patients' well-being is more stable than with HD, due to the continuous removal of excess fluid and metabolites from the body. The treatment prescription is individual for each paediatric patient, who is always treated in a multidisciplinary health team.

There are two forms of PD. These are continuous ambulatory PD (CAPD) and automated PD (APD). Both requires a dialysis approach-a peritoneal catheter inserted percutaneously into the lowest part of the abdominal cavity. The biggest problem is the risk of developing peritonitis, which can lead to poor peritoneal membrane function and insufficient dialysis. As a consequence, a change in modality of dialysis treatment is necessary. Activities that could damage the catheter are discouraged, but otherwise there are no serious restrictions on physical activity. There is a high overall burden on the family, which can lead to burnout. PD is less effective than HD, leaving abdominal overgrowth, peritoneal vascular damage, protein loss and psychosocial difficulties.

Conclusion: PD represents more free time and freedom, especially for patients under 5 years of age and their family, and does not require vascular access or anticoagulation therapy. Compared to HD, children's recovery and integration into a normal environment are better.

Keywords: peritoneal dialysis, children.

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ASISTIRANA PERITONEALNA DIALIZA

Assisted peritoneal dialysis

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IZVLEČEK

Izraz asistirana peritonealna dializa (PD) uporabljamo kadar zdravstveni delavec opravlja celotno ali del dializnega zdravljenja in s tem omogoča več bolnikom v skupnosti, da so deležni te vrste zdravljenja. Zaradi podaljševanja starostne dobe prebivalstva se število novih bolnikov povečuje. Mnogi se želijo zdraviti doma, vendar za to nimajo možnosti ali niti izbire. Asistirana PD omogoča bolnikom učinkovito in varno zdravljenje. Bolnikom, ki začenjajo zdravljenje z dializo, ta predstavlja izziv zaradi pridruženih bolezni, funkcionalnih oslabitev-invalidnosti, starosti,...

Potencialne prednosti PD pri starostnikih so manjša obremenitev kardiovaskularnega sistema in manj potrebnih prevozov v dializni center. S sprejemom Aneksa št.1 k splošnemu dogovoru za pogodbeno leto 2017, je asistirana peritonealna dializa na domu, s 1.1.2018 plačana s strani ZZZS. S splošnim dogovorom za leto 2019 je urejeno tudi plačilo v Domu starejših občanov (DSO). Do asistence pri izvajanju PD je upravičen vsak bolnik, ki si PD ne more izvajati sam ali s pomočjo svojce, si pa te metode želi ali je po oceni zdravnika zanj bolj primerna kakor HD in se bolnik s tem strinja. Izvajalci so patronažna služba zdravstvenih domov in medicinske sestre DSO.

Izobraževanje medicinskih sester za nego na domu in DSO poteka v lokalnem centru za peritonealno dializo. Izvajalci izobraževanja so diplomirane medicinske sestre (DMS), ki so izvajalke PD v lokalnem centru. V našem centru smo začeli z asistirano PD od leta 1998 do 2000, obudili z delavnico 2014, 2020 pa smo ponovno začeli z izvajanjem in edukacijo medicinskih sester. Od 2020-2024 smo izobraževali 46 patronažnih sester, ki so prejele potrdilo o pridobitvi dodanih znanj s področja peritonealne dialize.

S sodelovanjem medicinskega osebja iz dializnega centra, zdravstvenega osebja DSO ter patronažnimi medicinskimi sestrami in s pogostimi osvežitvami znanj se zagotavlja raven sposobnosti in uspešnosti izvajanja asistiranе PD.

Ključne besede: medicinska sestra, bolnik, asistirana peritonealna dializa, edukacija.

ABSTRACT

We use the term assisted peritoneal dialysis (PD) when a health professional provides all or part of dialysis treatment, allowing more patients in the community to receive this type of treatment.

The number of new patients is increasing due to the growing age of the population. Many want home-based treatment but do not have the opportunity or even the choice to do so. Assisted PD enables patients to receive effective and safe treatment. For patients starting dialysis treatment, this can be challenging due to comorbidities, functional impairment-disability, age, etc.

The potential benefits of PD in the elderly are a reduced burden on the cardiovascular system and fewer transfers to the dialysis centre. With the adoption of Annex 1 to the General Agreement for the 2017 contract year, home-based assisted PD has been paid by the National Health Insurance Fund since 1 January 2018. The 2019 General Agreement also regulates the payment of assisted PD in retirement homes. Any patient who cannot perform PD on their own or with the help of relatives, but wishes to do so, or whose doctor considers this method to be better than HD and agrees to it, is eligible for assistance with PD. The providers are the healthcare homes' patronage service and the nurses in the retirement homes.

Training of community nurses and nurses in retirement homes takes place at the local peritoneal dialysis centre. It is delivered by the local registered nurses who are the providers of PD. In our centre, we started with assisted PD from 1998 to 2000, revived it with a workshop in 2014, and in 2020 we started again with the implementation and education of nurses. From 2020-2024, we have trained 46 community nurses who have received a certificate of additional skills in the field of PD. The collaboration of medical staff from the dialysis centre, medical staff from retirement homes, and the community nurses as well as frequent refreshers ensures the appropriate level of competence and performance in the delivery of assisted PD.

Keywords: nurse, patient, assisted peritoneal dialysis, education.

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**PREDSTAVITEV DELOVANJA SEKCIJE MEDICINSKIH SESTER IN
ZDRAVSTVENIH TEHNIKOV V NEFROLOGIJI, DIALIZI IN
TRANSPLANTACIJI**

**Activities of the Section of nurses in nephrology, dialysis and
transplantation operating in the Nurses and Midwives Association of
Slovenia**

**Tadeja Kokelj Jeršin, dipl.m s., v.d. predsednice Sekcije medicinskih sester in
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Sekcija medicinskih sester v nefrologiji, dializi in transplantaciji.

IZVLEČEK

Sekcija medicinskih sester (MS) in zdravstvenih tehnikov (ZT) v nefrologiji, dializi in transplantaciji je bila ustanovljena leta 1987 z namenom hitrejšega razvoja zdravstvene nege (ZN) in širjenja znanja preko članstva v evropskem združenju The European Dialysis and Transplant Nurses Association/European Renal Care Association (EDTNA/ERCA). Od takrat slovenske medicinske sestre aktivno sodelujemo in prispevamo k strokovnemu razvoju v Evropskem in slovenskem prostoru na področju nefrologije, dialize in transplantacije. Preko članov izvršilnega odbora sekcije zagotavljamo pokritost z informacijami in naslavljanje strokovnih vprašanj po celi državi.

Cilj je poleg povezovanja in informiranja zaposlenih na ožjem strokovnem področju zagotoviti varno in kakovostno obravnavo kroničnega pacienta z boleznijo ledvic ali odvisnega od nadomestnega zdravljenja zaradi končne ledvične odpovedi (KLO). Od leta 1970, ko se je nadomestno zdravljenje KLO v Sloveniji začelo sledimo novitetam in vzpodbujamo že tako silovit razvoj tehnologije in pristopov na tem področju.

Od konca novembra 2022, ko je bil izvoljen aktualen izvršilni odbor sekcije smo uspešno izpeljali že nekaj projektov, so v postopku ali v planu:

Leto 2023:

- 1. strokovno srečanje: Izzivi in izkušnje medicinskih sester pri obravnavi nefrološkega pacienta, 21.3.2023, Ljubljana
- 2. strokovno srečanje: Vloga zdravstvene nege pri prehranskem svetovanju nefrološkim pacientom, 26.9.2023, Dragomer
- 3. strokovno srečanje: Kakovost in varnost v obravnavi nefrološkega pacienta, 28.11.2023, Maribor.
- Oblikujeta se delovni skupini za prehrano nefrološkega pacienta in za oblikovanje nacionalnih protokolov, ki sledita postavljenim načrtom in imata redna delovna srečanja.

Leto 2024:

- Izide Zbornik prispevkov strokovnih srečanj nefrološke sekcije v letu 2023, 26.4.2024
- Podpiše se pogodba o sodelovanju z EDTNA/ERCA, 12.4.2024.
- Specialna znanja iz nefrologije, dialize in transplantacije, ki so namenjena za poglobitev in razširitev znanja medicinskih sester in zdravstvenih tehnikov na imenovanih področjih se izvede v sodelovanju z UKC Ljubljana, Interno kliniko, Nefrološkim oddelkom, ki je vsebine tudi oblikoval.
- Oblikuje se dokument: Pogoji za napredovanje novo zaposlenih v hemodializi iz naziva dipl. m. s. ali dipl. zn. iz dialize II. v dializo I.
- Sodelovanje s sekcijo medicinskih sester in zdravstvenih tehnikov v družinski medicini ter Katedro za družinsko medicino pri oblikovanju protokola v referenčnih ambulantah za prepoznavanje in vodenje KLB (kronične ledvične bolezni).
- Sodelovanje tudi z drugimi sekcijami medicinskih sester in zdravstvenih tehnikov: v hematologiji, v endokrinologiji ter v kardiologiji in angiologiji.
- 4. strokovno srečanje: Jadrati skozi življenje v nevihti kronične ledvične bolezni – multidisciplinarna obravnava pacienta, 10.10.2024, Ljubljana.
- Sodelovanje s sindikati zdravstvene nege.
- Aktivno sodelovanje z mednarodnimi organizacijami EDTNA/ERCA in ICN (International Council of Nurses).
- Aktivnosti članov izvršilnega odbora in ostalih članov strokovne sekcije ob dnevu ledvic (po bolnišnicah, šolah, v spletnem okolju,...).

- Program za medicinske sestre na 8. slovenskem nefrološkem kongresu, ki poteka v Portorožu v zadnjih dneh meseca novembra in prvi dan decembra je postavljen in izpeljan v organizaciji strokovne sekcije. Zajete so vse subspecialne vsebine znotraj nefrologije. Med nastopajočimi gosti so tudi predavatelji iz tujine (Italije, Španije in Danske). V sklopu kongresa se izda publikacija: Knjiga izvlečkov, hkrati pa so vsa predavanja na razpolago v video obliki na spletni strani nefrološke sekcije Zbornice - Zveze.

Za zaposlene na področju nefrologije, ki imajo vizijo svojo karierno pot nadgraditi in razvijati je pomembna vključenost in aktivno sodelovanje tako v domačih kot tudi tujih organizacijah iz ožjega strokovnega področja. Tudi za MS in ZT, ki ne vidijo svojih izzivov na akademskem področju je cilj dosežati najvišji nivo izobraženosti, ki je izjemnega pomena najmanj v luči ohranjanja integritete ter suverenosti pri opravljanju dela. Ob enem je vključenost v tovrstna združenja ključno za ohranjanje delovne licence in socialno komponento v smislu izmenjave izkušenj ter mnenj. Cilj tovrstnih organizacij je tudi stremeti k doseganju standardov in vzpodbujanje raziskovanja v ZN. Vsota vsega je poleg osebnega poklicnega zadovoljstva tudi optimalna podpora pacientom in njihovim družinam.

Ključne besede: medicinske sestre, združenja, nefrologija.

ABSTRACT

The Section of Nurses and Medical Technicians in Nephrology, Dialysis and Transplantation was founded in 1987 with the aim of faster development of nursing and dissemination of knowledge through membership in the Association of The European Dialysis and Transplant Nurses Association/European Renal Care Association (EDTNA/ERCA). Since then, Slovenian nurses actively participate and contribute to professional development in the European and Slovenian area in the field of nephrology, dialysis and transplantation. Through the members of the Executive Committee, we ensure coverage of information and addressing professional questions throughout the whole Slovenia.

In addition to connecting and informing employees in a narrower professional field, the goal is to ensure safe and high-quality treatment of chronic kidney disease patients or those dependent on home treatment due to end-stage renal disease (ESRD). Since 1970, when the domestic

treatment of CKD in Slovenia began to follow the innovations, we have been encouraging the already vigorous development of technologies and approaches in this field.

Since the end of November 2022, when the current Executive Committee of the section was elected, we have already successfully implemented several projects, they are in the process or planned:

year 2023:

- 1st professional meeting: Challenges and experiences of nurses in the treatment of nephrology patients, 21 March 2023, Ljubljana
- 2nd professional meeting: The role of nursing in nutritional counseling for nephrology patients, 26/09/2023, Dragomer
- 3rd professional meeting: Quality and safety in the treatment of nephrology patients, 28 November 2023, Maribor.
- Working groups for the nutrition of nephrology patients and for the formation of national protocols are formed. Both follow the established plans and have regular working meetings.

Year 2024:

- Results Collection of contributions of professional meetings of the nephrology section in 2023, 26/04/2024
- A cooperation agreement with EDTNA/ERCA is signed, 12/04/2024.
- Special knowledge in nephrology, dialysis and transplantation, which are intended to deepen and expand the knowledge of nurses and medical technicians in the named fields, is carried out in cooperation with UKC Ljubljana, Internal Medicine, Nephrology Department.
- A document is being created: Conditions for the promotion of new employees in hemodialysis.
- Cooperation with the section of nurses and medical technicians in family medicine and in the development of a protocol in reference clinics for the identification and management of KLB chronic kidney disease.
- Cooperation with other sections of nurses and medical technicians: in hematology, in endocrinology, and in cardiology and angiology.

- 4th professional meeting: Sailing through life in the storm of chronic kidney disease - multidisciplinary treatment of the patient, 10/10/2024, Ljubljana.
- Cooperation with nursing trade unions.
- Active cooperation with the international organizations EDTNA/ERCA and ICN (International Council of Nurses).
- Activities of members of the Executive Committee and other members of the expert section on Kidney Day (in hospitals, schools, in the online environment,...).
- The program for nurses at the 8th Slovenian Nephrology Congress, which takes place in Portorož during the last days of November and the first day of December, is organized and carried out by the professional section. All subspecialties within nephrology are covered. Among the performing guests are also lecturers from abroad (Italy, Spain and Denmark).

For employees in the field of nephrology nursing care, who have a vision to upgrade and develop their career, it is important to be involved and actively participate in domestic and foreign organizations in the narrower field of expertise. Even for nurses, who do not see their challenges in the academic field, the goal is to achieve the highest level of education, which is extremely important, at least for maintaining integrity and sovereignty at the work. Involvement in such associations is key to maintaining a work license and a social component in terms of exchanging experiences and opinions. The goal of such organizations is also to strive to achieve standards and encourage research. In addition to personal professional satisfaction, the sum of everything is optimal support for patients and their families.

Keywords: nurses, associations, nephrology.

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THE ROLE OF PROFESSIONAL NURSING ASSOCIATIONS: OPPORTUNITIES & CHALLENGES

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ABSTRACT

Professional nursing associations play a pivotal role in advancing the nursing profession through education, advocacy, and leadership development. These organizations provide nurses with the opportunity to network, engage in professional development, and influence health policy. However, they also face challenges, including limited member engagement, resource constraints, and adapting to the evolving healthcare landscape. This presentation will explore the opportunities that EDTNA/ERCA, the European Dialysis Transplant Nurse Association/European Renal Care Association offers to strengthen the profession, as well as the challenges it must overcome to continue serving as effective advocates for renal nurses and healthcare improvement.

KURIKULUMI EDUKACIJE

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IZVLEČEK

Ko govorimo o kurikulumu edukacije na področju nefrologije, imamo v mislih kurikulum edukacije bolnikov s kronično boleznijo ledvic. Kronična ledvična bolezen je zaradi naraščajoče pojavnosti, pogostosti, obolevnosti, umrljivosti in visokih stroškov postala svetovni zdravstveni problem. V deželah razvitega sveta je prevalenca kronične ledvične bolezni ocenjena na 5-15 odstotkov prebivalstva in narašča s starostjo. Porast pogostosti kronične ledvične bolezni narašča s pogostostjo arterijske hipertenzije, sladkorne bolezni in debelosti. Bolniki s kronično boleznijo ledvic pogosto umrejo prej, kot pa nastopi potreba po nadomestnem zdravljenju končne odpovedi ledvic. Glavni vzrok smrti so srčno-žilne bolezni. (Bevc, 2018) Pomembno vlogo pri upočasnitvi napredovanja KLB ima ureditev dejavnikov tveganja, kot so arterijska hipertenzija, sladkorna bolezen, debelost, kar v veliki meri dosežemo s spremembo življenjskega sloga. Pri obvladovanju KLB imajo pomen vse tri oblike preventive- primarna, sekundarna in terciarna. V obdobju izpostavljenosti dejavnikom tveganja je to primarna preventiva. V obdobju bolezni, ko gre za začetek bolezni in zgodnje odkrivanje in ko bolezen še ni klinično izražena, je to sekundarna preventiva. V obdobju ko je bolezen klinično izražena (ozdravitev, trajna okvara ali smrt), je to terciarna preventiva. Vsaka od njih ima v svojem obdobju vlogo pri preprečevanju, zgodnjem odkrivanju in izobraževanju, informiranju ter krepitvi odgovornega vedenja posameznika za življenje z boleznijo (Kos).

Pri oblikovanju kurikulumu gre za oblikovanje učnega načrta. Enoten učni načrt zagotavlja enoten pristop in enakovredno obravnavo vseh, ki so vključeni v edukacijski proces. Kurikulum edukacije je pripravljen na podlagi strokovnih izsledkov in nudi okvir za delo s posameznikom ali skupino. Zagotavlja posredovanje informacij, pridobitev znanj in veščin v predvidenem obsegu vsem udeležencem enakovredno. V kurikulumu je na kratko podana strokovna vsebina, ki je tema edukacije in predstavlja temelj posameznega učnega sklopa, predvideno je število udeležencev, čas, metode dela. Pomemben element kurikulumu so cilji edukacije. Cilji

edukacije pomenijo smoter, ki usmerjajo edukacijo, in mu mora edukator/edukatorka slediti tekom učne enote in si na koncu odgovoriti na vprašanje, ali so cilji edukacije doseženi (Bohnec).

Ključne besede: učni načrt, kronična ledvična bolezen, življenjski slog.

ABSTRACT

When we talk about the education curriculum in the field of nephrology, we think the education curriculum for patients with chronic kidney disease. Chronic kidney disease has become a major global health problem due to its increasing occurrence, frequency, morbidity, mortality and high costs. In the countries of the developed world, the prevalence of chronic kidney disease is estimated at 5-15 percent of the population and is increasing with age. Frequency of chronic kidney disease increases with the frequency of arterial hypertension, diabetes and obesity. Patients with chronic kidney disease often die before the need for replacement therapy for end-stage renal disease occurs. The main cause of death is cardiovascular disease. (Bevc, 2018) Regulation of risk factors such as arterial hypertension, diabetes and obesity, plays an important role in slowing down the progression of CKD, which is largely achieved by lifestyle changes. All three forms of prevention- primary, secondary and tertiary, are important in the management of CKD. In the period of the disease, when it comes to the onset of the disease and early detection and when the disease is not yet clinically expressed, this is secondary prevention. In the period when the disease is clinically expressed (recovery, permanent impairment or death), this is tertiary prevention. Each of them has a role in its period in prevention, early detection and empowering the individual to live with the disease (Kos).

Planning curriculum means planning learning schedule. A uniform curriculum ensures a uniform approach and equal treatment of all involved in the educational process. The education curriculum is prepared on the basis of professional findings and provides a framework for working with an individual or a group. It ensures the transmission of information, the acquisition of knowledge and skills to the intended extent for all participants. In the curriculum, the professional content, which is the subject of the education, is briefly given, the number of participants, time, work methods are defined. An important element of the curriculum are educational goals. Goals of education are the essence of education, the participants must follow

them, and the end of planned curriculum answer the question, whether the goals of education have been achieved.

Keywords: curriculum, chronic kidney disease, lifestyle.

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ENHANCING VASCULAR ACCESS CARE IN HEMODIALYSIS: PRACTICAL APPLICATIONS OF POINT-OF-CARE ULTRASOUND

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Nephrology nurses have broadened their expertise and skills in recent years, assuming more advanced responsibilities within the nephrology field. One such advancement is the integration of ultrasound (US) into daily nursing practices. When it comes to vascular access for hemodialysis (HD), ultrasound has become a crucial tool, significantly improving the quality of care. Since nurses are the primary caregivers managing vascular access daily, it's essential that they employ every effective method to extend the lifespan and functionality of these accesses. Comprehensive training is crucial before adopting ultrasound techniques, ensuring safe and effective practice. Ultrasound offers numerous benefits in vascular access management, including vessel mapping, routine monitoring, and cannulation. This presentation will address Point of Care Ultrasound applications for daily practice in nephrology nursing.

KLINIČNO SPREMLJANJE ARTERIOVENSKE FISTULE

Monitoring and surveillance of arteriovenous fistulas

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IZVLEČEK

Uvod: Arteriovenska fistula (AVF) velja za »zlati standard« žilnega pristopa za kronične hemodializne bolnike. Verjetnost razvoja in uspešne uporabe na novo skonstruirane AVF za hemodializo je po enem letu med 60 in 80 %. Uspešnost se razlikuje glede na mesto in vrsto AVF. Vzroki odpovedi AVF so različni, večinoma pa gre za stenoze v perianastomotičnem področju ali na strani venskega odtoka. Za pravočasno odkritje zožitev, ki vodijo v zmanjšanje pretoka in trombozo AVF, je potrebno redno klinično spremljanje AVF in morda tudi občasen pregled AVF z ultrazvokom (UZ) ali meritvijo pretoka z drugo metodo. Klinični pregled AVF vključuje inspekcijo, palpacijo in avskultacijo AVF, spremljanje delovanja pa poleg pregleda dodatno zajema še oceno dinamike mesečnih izvidov, upoštevanje težavnosti zbadanja in potrebnega časa za kompresijo vbodnih mest po izvleku igel ter merjenje recirkulacije.

Diskusija: Klinični pregled ima glede na literaturo več kot 50 % občutljivost za dokaz izolirane perianastomotične ali stenoze na venski strani AVF, njegova natančnost pa se pri manj izkušenih pregledovalcih zmanjša predvsem ob hkratni prisotnosti obeh vrst stenoz na isti AVF, kar zabiše tipično klinično sliko. Občutljivost dodatno povečajo druge metode spremljanja. Orientacijski klinični pregled AVF je smiseln pred vsakim zbadanjem AVF, natančen klinični pregled pa se priporoča vsaj enkrat mesečno. Nadzor AVF najpogosteje pomeni merjenje pretoka skozi AVF ali UZ pregled AVF. Občutljivost metod je višja, ampak je vsaj pri UZ še vedno odvisna od preiskovalca. Glede na raziskave, je vprašljivo, ali rutinski nadzor v primerjavi z rutinskim kliničnim spremljanjem pripomore k podaljšanju delovanja žilnega pristopa ali zgolj poveča stroške in vodi k prekomerni napotitvi na fistulografije.

Zaključek: Za uspešno delovanje večine AVF je potrebno redno klinično spremljanje AVF. Ob rednem spremljanju se kvaliteta pregleda AVF poveča in lahko konkurira nadzoru AVF. Glede na lažje izvajanje spremljanja je to vsekakor najpomembnejša presejalna metoda, ki jo je potrebno rutinsko izvajati.

Ključne besede: stenoza AVF, klinični pregled AVF, klinično spremljanje AVF, klinični nadzor AVF

ABSTRACT

Introduction: Arteriovenous fistulas (AVF) is the “golden standard” for hemodialysis access in chronic hemodialysis. Primary patency of AVF after one year is between 60 and 80%, while assisted primary patency is about 5% higher. Exact numbers vary depending on the location and type of AVF. The most common causes of AVF failure are perianastomotic or outflow stenoses. For timely diagnosis regular monitoring and perhaps also regular surveillance of AVF is needed. Monitoring of AVFs includes AVF examination (inspection, palpation, auscultation) and review of routine laboratory tests, monitoring difficulties in cannulation or prolonged hemostasis after needle withdrawal, measuring recirculation and using other clinical clues.

Discussion: Clinical examination by an experienced observer has relatively high sensitivity and specificity for perianastomotic or outflow stenosis, with lower sensitivity for AVFs with concomitant perianastomotic and outflow stenosis. Sensitivity increases further with addition of other data included in monitoring. Short clinical examinations are advised before every hemodialysis and complete examination at least monthly. AVF surveillance is more advanced and usually involves measuring AVF blood flow or ultrasound (US) examination of AVF. The sensitivity of those two methods for detecting problematic AVFs can be higher than sensitivity of clinical examination, but at least US is dependent on the experience of the examiner. Most studies, which were mostly conducted on AV grafts, did not convincingly show that routine AVF surveillance prolongs the lifespan of AVF and might just increase the frequency of unnecessary angiography and costs.

Conclusion: For maintaining function of AVFs regular monitoring is needed. When performed regularly, the quality of monitoring increases and could be like more advanced AVF surveillance. Since the availability of clinical monitoring is much higher it remains the most important screening method and should be routinely used in clinical practice.

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ZBADANJE ZAHTEVNIH ARTERIOVENSKIH FISTUL IN PRVA ZBADANJA PO OPERACIJI S POMOČJO ULTRAZVOČNE NAPRAVE

Puncturing of complicated arteriovenous fistulas (AVF) and first puncturing after operation with help of ultrasound guidance

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IZVLEČEK

Uvod: Dobro delovanje žilnega pristopa za dializo je pomembno za bolnika in za medicinsko sestro. Pogoste komplikacija pri zdravljenju s hemodializo so težave pri zbadanju arteriovenske fistule. Medicinska sestra kot pomoč pri prvih punkcijah in zahtevnih arteriovenskih fistulah lahko uporabi ultrazvočno prenosno aparatu za določanje globine in smeri poteka fistulne vene ali za ciljano usmerjanje punkcijske igle.

Metode: Uporabili smo deskriptivno metodo dela. Podatke smo zbrali s pomočjo pregleda bolnikove dokumentacije in jih analizirali s pomočjo programske opreme Microsoft Office.

Rezultati: V našem dializnem centru smo s pomočjo ultrazvočne naprave opravili 46 vstavitve dializnih igel pri kroničnih dializnih bolnikih, 12 punkcij v začetnem zbadanju za metodo baten hole; 26 vstavitve dializnih venil pri bolnikih, ki so potrebovali fistulografijo po trombektomiji. Neuspešnih vbodov s pomočjo ultrazvočne naprave je bilo 8. Poseg zbadanja je potekal v aseptičnih pogojih. 25 Medicinskih sester se je udeležilo delavnice zbadanja s pomočjo ultrazvočne naprave v Simulacijskem centru Univerzitetnega kliničnega centra.

Razprava: Pri uporabi ultrazvočne naprave za zbadanja arteriovenskih fistul po operaciji in pri zahtevnih fistulah smo imeli težave z uskladitvijo vida z ekranom na aparaturi, istočasnim premikanjem sonde in vodenjem dializne igle ali venile. Tudi v strokovnih člankih po svetu navajajo enake težave medicinskih sester. Študije tudi niso pokazale vidnega rezultata pri preprečevanju komplikacij zbadanja.

Zaključek: Uporaba ultrazvočnega aparata pri zbadanju zahtevnih arteriovenskih fistul in pri prvih zbadanjih je v pomoč medicinski sestri. Za uspešno delo je potrebna organizirana edukacija rokovanja z ultrazvokom. Potrebno je uskladiti koordinacijo vida in ročnega vodenja ultrazvočne sonde ter punkcijske igle.

Ključne besede: arteriovenska fistula, ultrazvok, zbadanje, medicinska sestra.

ABSTRACT

Introduction: Good functioning of vascular access is important for patient and nurse. Frequent complication of hemodialysis treatment is difficult puncturing of arteriovenous fistulas. A mobile ultrasound unit can be used by a nurse as a help in first puncturing of complicated arteriovenous fistulas, for determination of depth and direction of fistule vein or for targeted directioning of a puncturing needle.

Methods: We have used descriptive method of research. We collected data through insight in patient's documentaion and statistically analyzed it with the help of Microsoft Office Tools.

Results: In our centre for hemodialysis, with the help of of ultrasound guidance we placed 46 needles in our patients in chronic hemodialysis programme, 12 initiation puncturings for "button hole" method, and 26 cannulations for the need of fistulography after thrombectomy procedure. We recorded 8 unsuccessfull attempmts of puncturing with ultrasound device. Cannulation procedure was performed in aseptic conditions. 25 nurses were included in a cannulation training programmme with ultrasound guidance in Simulation center of University Clinical Center.

Discussion: With the usage of ultrasound device in the first, after operation puncturing of arteriovenous fistulas ,we had difficulties in coordination of eyesight with ultrasound display and simultaneous movement of ultrasound probe and guidance of a dialysing needle or cannula. Same problems were addressed in different medical articles all around the world. Studies didn't show convincing results in prevention of complications of needle placements

Conclusions: Ultrasound usage in cannulation of arteriovenous fistulas or with first insertions is a significant help to a nurse. For a successfull work an organized training with ultrasound is needed. A coordination in eyesight, probe movement and needle is crucial for a good medical practice

Keywords: arteriovenous fistula, ultrasound, pncturing, nurse.

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SODOBNI ŽILNI PRISTOPI

Modern vascular approaches

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NEFRODIAL D.O.O. - Naklo

IZVLEČEK

Dializno zdravljenje je ključni terapevtski postopek za bolnike z odpovedjo ledvic, saj omogoča preživetje in izboljša njihovo kakovost življenja. Uspešnost dializnega zdravljenja je v veliki meri odvisna od točnosti vzpostavitve in vzdrževanja ustreznega žilnega dostopa v obtočilih. V prispevku so obravnavani sodobni pristopi k ustvarjanju in vzdrževanju žilnih pristopov za dializo, s posebnim poudarkom na hemodializi, kjer je zanesljiv žilni dostop ključnega pomena. Predstavljene so tri glavne vrste žilnih pristopov: arteriovenska fistula, arteriovenski presadek in centralni venski kateter. Fistula predstavlja naraven žilni dostop z najdaljšim preživetjem in najmanj zapleti, medtem ko se v primeru nemogoče uporabe fistule uporablja arteriovenski presadek, ki ima krajšo življenjsko dobo in več zapletov. Začasna rešitev je centralni venski kateter, ki se uporablja v nujnih primerih ali kadar drugi pristopi niso izvedljivi; hkrati predstavlja pristop največje tveganje za okužbe in druge zaplete.

V bolnišnicah pacienti ob sprejemu običajno potrebujejo vzpostavitev žilnega pristopa, pri čemer je najbolj razširjeno uvajanje periferne intravenske kanile. Hospitalizirani pacienti potrebujejo vzpostavljen intravenski pristop za dajanje zdravil, tekočin ali krvnih pripravkov. Uspešen prvi poskus vzpostavitve intravenske poti zagotavlja takojšnjo aplikacijo zdravil in tekočin, čeprav je ta postopek najpogostejši invazivni bolnišnični poseg, ki se izvaja po vsem svetu, je povezan z visoko stopnjo neuspeha. Neuspešen poizkus vzpostavitve periferne intravenske poti predstavlja breme za pacienta, medicinsko sestro in zdravstveni sistem. Aplikacija intravenskih zdravil pri pacientih s težkim venskim pristopom zahteva celosten pristop, ki vključuje uporabo alternativnih naprav, pravilno aplikacijo intravenskih zdravil ter stalno izobraževanje in usposabljanje zdravstvenega osebja. V kasnejšem delu so predstavljene sodobne metode in materiali, ki omogočajo izvedbo varnejših in učinkovitejših venskih pristopov. Mednje spadajo nove kirurške tehnike, uporaba modernih slikovnih metod za detajlnejše načrtovanje in spremljanje samih pristopov ter razvoj novih materialov za presadke in katetre, ki zmanjšujejo tveganja za okužbo in trombozo. Prav tako je poudarjena pomembnost

interdisciplinarnega pristopa pri izbiri izvedbe venskega pristopa in je, po mojem mnenju, ena izmed ključnih ugotovitev. Nato so predstavljeni primeri in smernice glede tega, kako obravnavati takojšnje in dolgoročne posledice pristopa, kot so tromboze, okužbe in zapore žilnih pristopov.

Zaključek prispevka povzema glavne izzive in prihodnje smernice razvoja na področju žilnih pristopov za dializno zdravljenje. Poudarjena je potreba po nenehnem izobraževanju zdravstvenih delavcev in pacientov ter po nadaljnjih raziskavah in inovacijah, ki bi prispevale k izboljšanju kakovosti življenja bolnikov na dializi. Razvoj novih tehnologij in pristopov, ki zmanjšujejo tveganja in podaljšujejo življenjsko dobo žilnih pristopov, predstavlja ključni izziv za prihodnost dializnega zdravljenja.

Ključne besede: Hemodializa, arteriovenska fistula, arteriovenski presadek, centralni venski kateter, žilni dostop.

ABSTRACT

Dialysis treatment is a crucial therapeutic procedure for patients with kidney failure, as it enables survival and improves their quality of life. The success of dialysis treatment largely depends on the accuracy of establishing and maintaining an appropriate vascular access in the circulatory system. This article focuses on modern approaches to creating and maintaining vascular access for dialysis, particularly hemodialysis, which requires reliable access to blood vessels. Three primary types of arterial access have been identified: arteriovenous fistula, arteriovenous graft, and central venous catheter. The fistula represents a natural vascular access with the longest survival and the fewest complications, whereas the AV graft is used when a fistula is not feasible, despite its shorter survival and higher incidence of adverse effects. A central venous catheter is a temporary solution used in emergencies or when other approaches are not feasible; however, it poses the highest risk of infections and other complications.

In hospitals, patients usually need to establish vascular access upon admission, with the most common method being the insertion of a peripheral intravenous cannula. Hospitalized patients require established intravenous access for the administration of medications, fluids, or blood products. A successful first attempt at establishing intravenous access ensures the immediate administration of medications and fluids. Although this procedure is the most common invasive hospital intervention performed worldwide, it is associated with a high failure rate. A failed

attempt to establish peripheral intravenous access represents a burden for the patient, the nurse, and the healthcare system.

The administration of intravenous medications in patients with difficult venous access requires a comprehensive approach that includes the use of alternative devices, proper administration of intravenous medications, and continuous education and training of healthcare personnel.

The latter part of the article presents modern methods and materials that enable safer and more efficient venous access. These include new surgical techniques, the use of advanced imaging methods for detailed planning and monitoring of the access, and the development of new materials for grafts and catheters that reduce the risk of infection and thrombosis. The importance of an interdisciplinary approach in choosing the type of venous access is emphasized as one of the key findings. Additionally, examples and guidelines are presented on how to address the immediate and long-term consequences of access, such as thrombosis, infections, and the failure of a thrombosed access.

In conclusion, the key challenges and development guidelines for vascular access in dialysis treatment are outlined. Continuous education of healthcare workers and patients, along with ongoing research and innovation, are essential for further improving the quality of life for dialysis patients. Testing new technologies and approaches that reduce risks and extend the lifespan of vascular access remains a challenge for the future of dialysis treatment.

Keywords: Hemodialysis, arteriovenous fistula, arteriovenous graft, central venous catheter, vascular access.

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KVALITETA ŽIVLJENJA DIALIZNIH BOLNIKOV Z DIALIZNIM KATETROM

Quality of Life in Dialysis Patients with a Dialysis Catheter

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IZVLEČEK

Teoretična izhodišča: Za bolnike na hemodializi je žilni dostop ključnega pomena za izvajanje hemodialize. Njegova funkcija lahko vpliva ne le na klinični izid zdravljenja, ampak tudi na splošno kakovost življenja bolnika. To poudarja potrebo po izboljšanju kakovosti strokovne oskrbe žilnega pristopa. Začasni ali trajni žilni pristop predstavljajo dializni katetri, ki zagotavljajo dobre rezultate zdravljenja in s tem dobro kvaliteto življenja bolnikov.

Metode: Uporabljena je bila metoda pregleda tuje in domače literature, nestrukturiran intervju ter deskriptivna metoda dela. Podatke smo pridobili iz dokumentacije dializnih bolnikov v Centru za Dializo Ljubljana in pregledom dokumenta Protokol vstavitvev dializnih katetrov. Pri delu smo uporabili program Microsoft Office.

Rezultati: V septembru 2024 se je dializiralo 165 kroničnih dializnih bolnikov, od tega 29 bolnikov preko dveh enolumenskih jugularnih katetrov ali dvolumenskega tuneliziranega katetra. Največ bolnikov z dializnimi katetri je bilo v starosti med 75 +-5 let. Razlogi za vstavitvev dializnih katetrov so bili: izčrpane možnosti za konstrukcijo nove arteiovenske fistule zaradi dolgoletnega nadomestnega zdravljenja, čas zorenja AVF, ter pričetek zdravljenja pred konstrukcijo AVF. Zdravstvena oskrba dializnega katetra je bila izvajana vsak termin zdravljenja. Vrednosti hemoglobina pri pacientih so bile od 100 do 120 mmol/l, vrednosti albuminov v krvi so bile v mejah normale. Tujo pomoč v samooskrbi potrebuje 10 bolnikov, 2 bolnika sta zaposlena. Težave s spanjem, prehranjevanjem, omejitvami gibanja in socializacijo so imeli starejši bolniki. Mlajši bolniki na dializi so imeli težave z depresijo in najnižjim zadovoljstvom na področju motenj pri spanja, kopianju in osebni higieni in videzu. Za vse bolnike predstavlja problem varnost dializnega katetra pred izpadom, krvavitvijo, nemoč ob nastopu komplikacij.

Zaključek in diskusija: Kakovost življenja starejših bolnikov s dializnimi katetri je zmanjšana, saj se povečuje število težav povezanih z komorbidnostjo in z žilnim pristopom. Ker v nadomestno zdravljenje z dializo vstopajo vse starejši bolniki, je stopnja samooskrbe primerna značilnostim starejše generacije. Z izvajanjem dialize preko dializnih katetrov bolniki dosegajo dobro kvaliteto zdravljenja in življenja.

Ključne besede: Kakovost življenja, dializni bolnik, dializni kateter.

ABSTRACT

Theoretical Background: Vascular access is crucial for patients undergoing hemodialysis, as its functionality can impact not only clinical outcomes but also the overall quality of life. This underscores the importance of enhancing the quality of professional vascular access care. Dialysis catheters, used as either temporary or permanent vascular access, can yield positive treatment outcomes and contribute to a good quality of life for patients.

Methods: This study involved a review of domestic and international literature, unstructured interviews, and descriptive methods. Data were collected from patient documentation at the Ljubljana Dialysis Center and through a review of the Dialysis Catheter Insertion Protocol. Microsoft Office tools were used for data management and analysis.

Results: In September 2024, 165 chronic dialysis patients were treated, including 29 patients using either two single-lumen jugular catheters or a double-lumen tunneled catheter. The majority of patients with dialysis catheters were between 70 and 80 years old. The main reasons for catheter insertion included limited options for creating a new arteriovenous fistula (AVF) due to prolonged dialysis treatment, the AVF maturation period, and the need to start dialysis before an AVF could be created. Catheter care was provided at every dialysis session. Patient hemoglobin levels ranged from 100 to 120 mmol/l, with blood albumin levels within the normal range. Ten patients required assistance with self-care, and two were employed. Older patients commonly reported issues with sleep, eating, mobility, and social interaction, while younger patients on dialysis experienced challenges with depression and low satisfaction related to sleep, bathing, personal hygiene, and self-image. All patients faced concerns about catheter security, such as the risks of displacement, bleeding, and a lack of control in the event of complications.

Conclusion and Discussion: The quality of life for older patients with dialysis catheters is often lower due to increased health issues related to comorbidities and complications with vascular access. As more elderly patients begin dialysis, self-care ability aligns with the typical characteristics of the older age group. By using dialysis catheters, patients can achieve effective treatment and maintain a satisfactory quality of life.

Keywords: Quality of life, dialysis patient, dialysis catheter.

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PRIPRAVA PACIENTOV NA TRANSPLANTACIJO LEDVICE V SPLOŠNI BOLNIŠNICI NOVO MESTO

Patient preparation for a kidney transplantation in a General hospital Novo Mesto

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IZVLEČEK

Transplantacija ledvice je ena izmed metod nadomestnega zdravljenja končne ledvične odpovedi. Pomembno je, da se pacienti že v predializnem obdobju seznanijo z vsemi oblikami nadomestnega zdravljenja končne ledvične odpovedi. Lečeči nefrolog je tista oseba, ki prva nefrološkemu pacientu posreduje informacije o transplantaciji in ko se pacienti dokončno odločijo za to možnost, je medicinska sestra tista, ki pouči pacienta o podrobnostih, ki jih potrebuje za pripravo na transplantacijo. Dobi informacije o dobrih in slabih plateh transplantacije, o preiskavah, o zdravljenih proti zavrnitvi in ostale stvari, ki ga še zanimajo. Vsi pacienti dobijo v podpis izjavo, v kateri s podpisom potrdijo, da se strinjajo z vsemi posegi in preiskavami, ki so potrebni za pripravo na TX in lahko tudi kadarkoli prekličejo postopek priprave na TX.

V pripravi na transplantacijo je potrebno vzajemno sodelovanje pacienta z medicinskim osebjem, tako v matičnem dializnem centru kot s TX centrom. Nujno je, da pacient sproti prinaša vse izvide opravljenih preiskav, da lahko takoj, ko so le-te zbrane v zbirni mapi pacienta, zdravniki nefrologi izpolnijo protokol in ga pošljemo v center za TX v Ljubljano.

V TX centru protokol pregledajo, če so kakršnakoli odstopanja, se preiskave nadaljujejo bolj obširno. Sledi urološki in kardiološki konzilij, pregled pri psihologu in anesteziologu, tipizacija in re - tipizacija ter uvrstitev na aktivno čakalno listo, če ni nikakršnih kontraindikacij za transplantacijo ledvice.

Ko so pacienti na aktivni čakalni listi za transplantacijo ledvice je potrebno sproti obnavljati preiskave, motiviranje in dodatno izobraževanje pacientov, odvzem krvi vsake 3 mesece za določanje senzibilizacije ter spremljanje bolnikovega zdravstvenega stanja ter sporočanje posebnosti v TX center.

Vsak pacient, ki se odloči za pripravo na transplantacijo ledvice, se mora zavedati, da je to zelo zapleten postopek, da je potrebno imeti realna pričakovanja in se zavedati, da se lahko kadarkoli zgodi, da pride do odpovedi presadka kar pomeni vrnitev na hemodializo.

Ključne besede: transplantacija, nadomestno zdravljenje, pacient, medicinska sestra.

ABSTRACT

Kidney transplantation is one of the methods of a substitution therapy for End Stage Renal Disease (ESRD). It's important for the patients to be familiar with all types of substitution therapies for ESRD already in the pre-dialysis period. A treating nephrologist is the first person that provides information considering the transplantation to patients; however, when patients finally decide to undergo this treatment, a nurse is the one that educates them on the details needed to prepare for a successful transplantation. Patients can, therefore, get all the necessary information involving positive and negative aspects of transplantations, examinations needed, medicine used to prevent kidney rejection, and other things they might be interested in.

All patients are obliged to sign a statement confirming that they agree with all the procedures and tests needed to prepare for a transplantation; however, they can still cancel the preparation procedure at any time. During the transplantation preparation a reciprocal cooperation of a patient and a medical staff in the parent dialysis centre and a transplantation centre is vital. Patients must regularly and instantly present all their test results, which are then collected in the patient's medical file, allowing the doctors to complete the protocol and send it into the transplantation centre in Ljubljana.

The protocol is carefully examined in the transplantation centre and if any kind of deviation is noticed, further extensive tests are carried out. Next comes the urology and cardiology council, a psychological and anesthesiological examination, typification and re-typification, and placing on the active waiting list, providing that there are no contraindications for kidney transplantation.

While the patients wait for the transplantation in the active waiting list, tests must be repeated frequently, they must remain motivated, and further education about the transplantation should be provided for them. Every three months their blood should be drawn and tested to achieve sensibilization, monitor the patients' health, and inform the transplantation centre of any changes.

Each patient that decides for a kidney transplantation must be aware of the complexity of this procedure, the necessity of having realistic expectations, and also the fact that transplant failure can happen at any time, meaning that they will have to return to hemodialysis.

Keywords: nurse, patient, substitution therapy, transplantation.

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OBRAVNAVA PACIENTA PRED IN PO TRANSPLANTACIJI LEDVICE V UKC MARIBOR

Treatment of the patient before and after kidney transplantation in UKC Maribor

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IZVLEČEK

V Univerzitetne kliničnem centru (UKC) Maribor na oddelku za dializo se z pripravo na transplantacijo ledvice ukvarjamo že od leta 1980. Naš prvi pacient je bil poslan na transplantacijo v Pariz, kjer je prejel kadavrsko ledvico. Leta 1986 smo začeli sodelovati z transplantacijskim centrom UKC Ljubljana, ki je edini transplantacijski center v Sloveniji in je del Eurotransplanta.

Transplantacija ledvice je način zdravljenja, ki je najbolj podoben »normalnemu« načinu življenja. Od pacienta se pričakuje in zahteva popolno sodelovanje, redno jemanje terapije in upoštevanje navodil, podanih iz strani zdravnikov specialistov in sester na dializnem oddelku.

Na transplantacijo se pacienti začnejo pripravljati v času ko pridejo na hemodializo ali na peritonealno dializo. Zelo motivirani pacienti, ki redno obiskujejo nefrološko ambulanto, lahko pričnejo z pripravami na transplantacijo že v pred dializnem obdobju.

V času med letom 1980 in danes, smo v naši transplantacijski ambulanti uspešno obdelali in poslali na presaditev 178 pacientov. Večina pacientov je bilo transplantiranih s kadaverskimi ledvicami, sedem jih je bilo transplantiranih od živih darovalcev. Pet pacientov pa je imelo zraven ledvic transplantiran tudi pankreas.

Po transplantaciji naše paciente v celoti obravnavajo v centralnem slovenskem transplantacijskem centru v Ljubljani, mi smo jim samo na razpolago za psihično podporo, za razna vprašanja, kakšen odvzem krvi, da jim ni potrebno potovati v Ljubljano.

Ključne besede: priprava pacienta na presaditev ledvice, sodelovanje sestra-pacient

ABSTRACT

At the University Medical Centre (UKC) Maribor, in the dialysis department, we have been preparing patients for kidney transplantation since 1980. Our first patient was sent for transplantation in Paris, where they received a cadaveric kidney. In 1986, we began collaborating with the transplant center at UKC Ljubljana, which is the only transplant center in Slovenia and is part of Eurotransplant.

Kidney transplantation is a treatment method that most closely resembles "normal" living. It is expected and required that the patient fully cooperates, regularly takes prescribed therapy, and follows the instructions provided by specialist doctors and nurses in the dialysis department.

Patients begin preparing for transplantation when they start hemodialysis or peritoneal dialysis. Highly motivated patients who regularly visit the nephrology clinic can start preparing for transplantation even in the pre-dialysis phase.

Between 1980 and today, we have successfully processed and sent 178 patients for transplantation from our transplant clinic. Most patients received cadaveric kidneys, while seven were transplanted with kidneys from living donors. Additionally, five patients received both a kidney and a pancreas.

After the transplantation, our patients are fully managed at the central Slovenian transplant center in Ljubljana, while we are available to them for psychological support, for various inquiries, and for occasional blood tests, so they do not have to travel to Ljubljana.

Keywords: patient preparation for kidney transplantation, nurse-patient cooperation

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VODENJE PACIENTA NA AKTIVNEM ČAKALNEM SEZNAMU EUROTRANSPLANTA ZA PRESADITEV LEDVICE

Patient management on the active Eurotransplant waiting list for kidney transplantation

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IZVLEČEK

v prispevku želimo predstaviti vodenje pacienta na aktivnem čakalnem seznamu Eurotransplant za presaditev ledvice. Po zaključenem obsežnem protokolu preiskav se pacienta vključi na aktivni čakalni seznam. S tem trenutkom lahko kadarkoli pričakujemo ponudbo primerne ledvice za presaditev. Pacienta pred samo aktivacijo naučimo aktivnega čakanja, kar pomeni, da mora poskrbeti za 24 urno dosegljivost ter takojšnjo odzivnost na telefon in ažurno sporočanje zdravstvenih sprememb, odhodov v tujino in drugih pomembnih podatkov in informacij. Predvsem za sporočanje spremembe zdravstvenega stanja pacienta in s tem posledične neprimernosti in ponovne primernosti za presaditev se povezujemo z osebjem dializnih centrov. Svetujemo tudi glede prevoza ob klicu na presaditev in podamo ostala navodila, ki so pomembna ob prihodu na poseg. Čakalni čas na presaditev je lahko od nekaj ur do več tednov, mesecev tudi let v nekaterih primerih. Zato je potrebno, da pacient v tem času skrbi za svoje zdravje (urejen krvni tlak, krvni sladkor,...) in zdrav življenjski slog (ustrezno prehranjevanje, vzdrževanje primerne telesne teže, fizična aktivnost,...). Pomembno je zavedanje pacienta, da je za uspešno zdravljenje s presaditvijo ledvice potrebno, da je aktiven pri svojem zdravljenju in vodenju bolezni, kar velja tudi za čas čakanja na klic za presaditev. Po navodilih Centra za transplantacijo ledvic je potrebno tudi obnavljanje preiskav na eno leto, nekatere dodatne preiskave na tri leta, po obdobju petih let pa je potrebno ponoviti celoten protokol. Za obnavljanje preiskav skrbi zdravstveno osebje Centra za transplantacijo ledvic v sodelovanju z osebjem dializnih centrov kjer se posamezen pacient vodi. Prav tako sodelujemo pri izvajanju screeningov, predajanju pomembnih informacij o pacientu, organiziranju preiskav, reševanju novo nastalih situacij pacienta itd. Zato je razumevanje pomembnosti tega sodelovanja in izvajanje timskega dela na daljavo ključno za pacienta na aktivnem čakalnem seznamu.

Ključne besede: presaditev ledvice, aktivni čakalni seznam, pacient.

ABSTRACT

In this article, we want to present the management of patients on the active Eurotransplant waiting list for kidney transplantation. After completion of the extensive examination protocol, the patient is added to the active waiting list. With this moment, we can expect an offer of a suitable kidney for transplantation at any time. Before the actual activation, the patient is taught active waiting, which means that he must ensure 24-hour availability and immediate response to the phone and up-to-date reporting of health changes, departures abroad and other important data and information. In particular, we contact the staff of the dialysis centers to communicate the change in the patient's health status and the consequent unsuitability and re-suitability for transplantation. We also advise on transportation when called for a transplant and provide other instructions that are important when arriving for the procedure. The waiting time for a transplant can be from a few hours to several weeks, months or even years in some cases. Therefore, it is necessary for the patient to take care of his health during this time (regulated blood pressure, blood sugar, etc.) and a healthy lifestyle (proper nutrition, maintaining a suitable body weight, physical activity, etc.). It is important for the patient to be aware that successful treatment with a kidney transplant requires him to be active in his treatment and management of the disease, which also applies to the time of waiting for the transplant call. According to the instructions of the Center for Kidney Transplantation, it is also necessary to renew the tests every one year, some additional tests every three years, and after a period of five years it is necessary to repeat the entire protocol. The medical staff of the Center for Kidney Transplantation, in cooperation with the staff of the dialysis centers where the individual patient is managed, takes care of renewing the examinations. We also participate in performing screenings, handing over important information about the patient, organizing examinations, solving newly arising patient situations, etc. Therefore, understanding the importance of this collaboration and implementing remote teamwork is key for the patient on the active waiting list.

Keywords: kidney transplant, active waiting list, patient.

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EDUKCIJA BOLNIKA PO TRANSPLANTACIJI LEDVICE

Patient education after kidney transplantation

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IZVLEČEK

V izvlečku želimo predstaviti edukacijo, ki jo medicinske sestre izvajajo na Kliničnem oddelku za nefrologijo pri bolnikih po transplantaciji ledvice v Univerzitetnem kliničnem centru v Ljubljani. Transplantacija ledvice je eden izmed treh načinov nadomestnega zdravljenja končne ledvične odpovedi in omogoča bolniku podobno kvaliteto in kakovost življenja, kot jo je poznal preden je prišlo do pojava končne ledvične odpovedi. Zdravljenje s transplantacijo ledvice zahteva nekatere spremembe in prilagoditve v življenju posameznika, zato je po uspešno izvedeni transplantaciji, ključna edukacija bolnika s strani medicinske sestre, da se bolnik lažje prilagodi in sprejme posamezne novosti in zahteve, katere mora upoštevati in so ključne za uspešno delovanje presajenega organa. Z edukacijo bolnika prične medicinska sestra peti dan po transplantaciji, oziroma glede na zdravstveno stanje in zmogljivost posameznega bolnika. Vsebina knjižice Življenje s presajeno ledvico je razdeljena na pet sklopov edukacij, šesto edukacijo pa medicinska sestra izvede takrat, ko je bolnik odpuščen iz bolnišnične obravnave, z namenom, da prejme nekatere ključne nasvete za prve dni v domači oskrbi in navodila za prihod na prvi ambulantni pregled po transplantaciji. Z edukacijo medicinske sestre želijo opolnomočiti bolnika za sprejemanje odgovornosti za svoje zdravje, z bolnikom pa vzpostavijo odnos, ki mu daje zaupanje in oporo pri izzivih, ki se tekom zdravljenja lahko pojavijo.

Ključne besede: edukacija, bolnik, transplantacija ledvice.

ABSTRACT

In the abstract, we want to present the education that nurses provide at the Clinical Department of Nephrology for patients after kidney transplantation at the University Clinical Center in Ljubljana. Kidney transplantation is one of the three methods of replacement treatment for end-stage renal failure and allows the patient a similar quality and quality of life to the one he knew before the onset of end-stage renal failure. Treatment with a kidney transplant requires certain changes and adjustments in the life of the individual, therefore, after a successful transplant, the

patient's education by the nurse is key, so that the patient can more easily adapt and accept individual innovations and requirements, which must be considered and are key to the successful functioning of the transplanted organs. The nurse starts educating the patient on the fifth day after transplantation or depending on the health condition and capacity of the individual patient. The content of the booklet *Life with a transplanted kidney* is divided into five sets of education, and the sixth education is carried out by the nurse when the patient is discharged from hospital treatment, with the aim of receiving some key tips for the first days in home care and instructions for arriving at the first outpatient clinic post-transplant examination. Through education, nurses aim to empower the patient to accept responsibility for their own health and establish a relationship with the patient that gives them confidence and support in the face of challenges that may arise during treatment.

Keywords: education, patient, kidney transplantation.

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**ZDRAVSTVENA NEGA OTROK PO TRANSPLANTACIJI LEDVICE
NA ODDELKU ZA NEFROLOGIJO PEDIATRIČNE KLINIKE
LJUBLJANA**

**The Care of Children after Kidney Transplant at the Pediatric Department
of Nephrology**

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IZVLEČEK

Presaditev ledvice je oblika zdravljenja končne odpovedi ledvic. Uspešnost presaditve ledvice pri otrocih se iz leta v leto izboljšuje.

Če pri otroku po presaditvi ledvice ne pride do zgodnjih zapletov po operaciji, se otroka premesti na Pediatrični oddelek za nefrologijo. Zdravnik nefrolog spremlja pacientovo zdravstveno stanje in sproti obvešča oddelčne medicinske sestre, ki skupaj načrtujejo premestitev otrok iz Kliničnega oddelka za intenzivno terapijo otrok (KOITO) in mlajših iz LKH-Univ. Klinikum Graz. Otrok iz KOITO je na oddelek premeščen z vstavljenim Centralnim venskim katetrom (CVK) in stalnim urinskim katetrom. Otroka je potrebno premestiti v posebno izolirno sobo, ki je na koncu oddelka. Naloga medicinske sestre je spremljanje vseh vitalnih znakov, opazovanje operativne rane, ocena bolečine in skrbna kontrola tekočinske bilance. Potrebna je skrb za redno odvajanje blata. Medicinska sestra po naročilu zdravnika aplicira vso intravenozno in oralno terapijo. Opazovati mora spremembe kot so povečan iztok iz drena, slabost, vrtoglavica, barvo urina, itd.. Otrok ob prihodu na oddelek dobi prilagojeno hrano. Pri naročanju hrane sodeluje klinični dietetik v sodelovanju z zdravnikom nefrologom. Po transplantaciji ledvice otrok prejema imunosupresivno terapijo, ki zmanjšuje odpornost. Zato so potrebni na oddelku posebni preventivni ukrepi.

Tri tedne po transplantaciji je potrebno v Center za tipizacijo poslati otrokovo kri za shranitev, hkrati se pošlje tudi kri za serologijo na HBV. Glede na klinični potek se v času 10-14 dni odstrani stalni urinski kateter. Odstranitev šivov ali sponk se odstrani čez 2-3 tedne. V roku 3-4 tedne se odstrani JJ- kateter in peritonealni kateter v primeru, če ga otrok ima.

Ključne besede: transplantacija, ledvice, otrok.

ABSTRACT

Kidney transplantation is a form of treatment for end-stage renal failure. The success rate of kidney transplantation in children is improving year by year.

The nephrologist monitors the patient's condition and keeps the ward nurses informed, who together plan the transfer of children from the Clinical Intensive Care Unit for Children (KOITO) and younger children from LKH-Univ. Klinikum Graz. A child from KOITO is transferred to the ward with a Central Venous Catheter (CVC) inserted and an indwelling urinary catheter. The child has to be transferred to a special isolation room at the end of the ward. The nurse's task is to monitor all vital signs, observe the surgical wound, assess pain and carefully control the fluid balance. Care should be taken to ensure regular bowel movements. The nurse administers all intravenous and oral therapies as ordered by the doctor. She should observe for changes such as increased bowel movements, nausea, dizziness, urine colour, etc. The child is given a tailored diet on arrival at the ward. The clinical dietician in collaboration with the nephrologist is involved in ordering the food. After kidney transplantation, the child receives immunosuppressive therapy to reduce immunity. Therefore, special preventive measures are needed in the ward.

Three weeks after transplantation, the child's blood should be sent to the Typing Centre for storage and at the same time blood should be sent for HBV serology. Depending on the clinical course, the indwelling urinary catheter should be removed within 10-14 days. Removal of sutures or staples is removed after 2-3 weeks. The JJ catheter and the peritoneal catheter, if the child has one, are removed within 3-4 weeks.

Keywords: transplantation, kidney, child.

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HEMODIALIZA NA DOMU

Home hemodialysis

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IZVLEČEK

Hemodializa na domu (HHD) je ena izmed metod nadomestnega zdravljenja za bolnike s končno ledvično odpovedjo. Uporaba te metode se je v zadnjih letih povečala, saj so tako bolniki kot tudi zdravstveno osebje začeli prepoznavati njene praktične in klinične prednosti. Čeprav so prednosti in nedavni porast priljubljenosti HHD očitni, obstajajo številne ovire in izzivi, ki jih je pomembno upoštevati, preden začnemo z HHD. Uspešno izvajanje dialize na domu pri starejših odraslih lahko otežijo fizične ali kognitivne omejitve, zapleti povezani z zdravljenjem, pa tudi izzivi s katerimi se srečuje bolnikova družina. Priprava na izvajanje HHD se začne z učenjem bolnika. Učenje se začne s pripravo dializnega aparata kamor spada montaža, priključevanje, odključevanje, programiranje, alarmi, priprava žilnega pristopa, vodenje dokumentacije in aplikacija zdravil (npr. epoetini). Nato sledi priprava in učenje »buttonhole« tehnike zbadanja, ter izobraževanje družine. Predpogoj za HHD je tudi ustrezna priprava prostora v domačem okolju. Ko so vsi kriteriji zagotovljeni, bolnik lahko začne z dializo na domu ob nadzoru zdravstvenega osebja preko informacijske tehnologije. HHD predstavlja najboljšo povezavo med svobodo in kakovostno oskrbo, bolniku nudi samostojnost pri izvajanju zdravljenja in organiziranju svojega časa, ter posledično izboljša kakovost njegovega življenja. V sodobnem času bi bilo potrebno namesto predpisovanja samo učinkovite dialize strmeti k predpisovanju za posameznega bolnika optimalne dialize, ki poleg ustreznega očistka omogoča tudi najboljše preživetje in za bolnika najboljšo kvaliteto življenja. Za marsikaterega bolnika je to dializa na domu.

Ključne besede: hemodializa na domu, izzivi, prednosti, kakovost življenja

ABSTRACT

Home hemodialysis (HHD) is one of the methods of renal replacement therapy for patients with end-stage renal failure. The use of this method has increased in recent years, as both patients and healthcare personnel have begun to recognize its practical and clinical advantages. Although the benefits and recent rise in popularity of HHD are evident, there are numerous barriers and challenges that are important to consider before initiating HHD. Successful implementation of home dialysis in older adults may be complicated by physical or cognitive limitations, treatment-related complications, as well as challenges faced by the patient's family. Preparation for HHD begins with patient education. Education starts with preparation of the dialysis machine, including assembly, connection, disconnection, programming, alarms, preparation of vascular access, documentation management, and medication administration (e.g., epoetin). This is followed by preparation and education on the "buttonhole" needling technique, as well as family education. A prerequisite for HHD is adequate preparation of the home environment. Once all criteria are met, the patient can start home dialysis under the supervision of healthcare personnel via information technology. HHD represents the best combination of freedom and quality care, providing the patient with independence in treatment execution and time organization, thereby improving their quality of life. In modern times, instead of prescribing only effective dialysis, the focus should be on prescribing optimal dialysis for each individual patient, which, in addition to adequate clearance, also enables the best survival and highest quality of life for the patient. For many patients, this means home dialysis.

Keywords: home hemodialysis, challenges, advantages, quality of life

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POGOSTOST POJAVLJANJA ANKSIOZNOSTI IN DEPRESIJE PRI PACIENTIH NA HEMODIALIZI

Frequency of anxiety and depression in hemodialysis patients

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IZVLEČEK

Uvod: Kronična ledvična bolezen ima na duševno zdravje pacienta precejšen vpliv v smislu psiholoških stisk in posledičnih duševnih motenj, kot sta depresija in anksioznost. Psihiatrične motnje, zlasti depresija in anksioznost, so precej pogoste pri bolnikih na dializi zaradi odpovedi ledvic. Menijo, da so poslabšanja splošne funkcionalnosti in težave pri spoštovanju zdravljenja povezane z depresijo. Velik klinični izziv za nefrologe in dializne organizacije sta prepoznavanje anksioznosti in depresije pri bolnikih s hemodializo ter zagotavljanje ustreznega zdravljenja le teh.

Cilj: V prispevku bomo predstavili pojavnost anksioznosti in depresije med pacienti na hemodializi.

Metode: V anketnem vprašalniku je bilo vključenih 45 pacientov ženskega in moškega spola vseh starosti, ki se zdravijo na hemodializi v Splošni bolnišnici Dr. Franca Derganca. V anketnem vprašalniku anksioznosti se prvih 14 postavk nanaša na somatske simptome, 7 pa o kognitivnih simptomih.

Rezultati: Pri vprašalniku anksioznosti je sodelovalo 30 pacientov. S pomočjo točkovne lestvice, se jih je opredelilo z nizko anksioznostjo 23 pacientov, z zmerno anksioznostjo pa 4. Pri vprašalniku depresije se je največ pacientov (n=12) umestilo v razpon, ki velja za normalno, 9 pacientov je sodilo med blage motnje razpoloženja, 2 pacienta v mejno klinično depresijo ter 3 pacienti v zmerno depresijo.

Diskusija: Rezultati naše raziskave so pokazali, da ima večina pacientov normalne vrednosti anksioznosti in depresije, pri nekaterih pa se pojavlja zmerna oblika anksioznosti in depresije.

Zaključek: Poslabšanje duševnega zdravja med kroničnimi ledvičnimi bolniki je predvsem posledica prepleta različnih dejavnikov (starost, spol, motnje spanja, slabša psihološka fleksibilnost, nizka samopodoba, spremembe življenjskega sloga).

Ključne besede: hemodializa, anksioznost, depresija.

ABSTRACT

Introduction: Chronic kidney disease has a significant impact on the patient's mental health in terms of psychological distress and resulting mental disorders such as depression and anxiety. Psychiatric disorders, especially depression and anxiety, are quite common in patients on dialysis for kidney failure. Deteriorations in general functioning and difficulties in adherence to treatment are thought to be associated with depression. A major clinical challenge for nephrologists and dialysis organizations is to identify anxiety and depression in hemodialysis patients and ensure appropriate treatment for them.

Objective: In this article, we will present the incidence of anxiety and depression among hemodialysis patients.

Methods: The questionnaire included 45 male and female patients of all ages who are undergoing hemodialysis treatment at the General hospital Dr. Franca Derganca. In the anxiety questionnaire, the first 14 items refer to somatic symptoms and 7 to cognitive symptoms.

Results: 30 patients participated in the anxiety questionnaire. With the help of a scoring scale, 23 patients were identified as having low anxiety, and 4 as having moderate anxiety. In the depression questionnaire, most patients (n=12) were in the range considered normal, 9 patients were classified as having mild mood disorders, 2 patients into borderline clinical depression and 3 patients into moderate depression.

Discussion: The results of our research showed that the majority of patients have normal levels of anxiety and depression, while some have a moderate form of anxiety and depression.

Conclusion: Deterioration of mental health among chronic kidney patients is primarily the result of a combination of various factors (age, gender, sleep disorders, poorer psychological flexibility, low self-esteem, lifestyle changes).

Key words: hemodialysis, anxiety, depression.

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FABRYEVA BOLEZEN; REDKA BOLEZEN S KATERO SE SREČUJEMO TUDI V NEFROLOGIJI

Fabrye's disease; a rare disease also encountered in nephrology

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IZVLEČEK

Fabryeva bolezen spada med redke metabolične bolezni katere incidenca je 1 na 40000. Osnovni vzrok je mutacija na področju gena GLA na x kromosomu. Posledično je zato nizka aktivnost lizosomskega encima alfa-galaktosidaza (α -GalA). Zaradi tega se kopičijo sfingolipidi v celicah in tkivih in z leti se razvije okvara t.i. tarčnih organov. Bolezen se kaže zelo različno tudi zaradi različnega nivoja rezidualnega encima, časa odkritja bolezni, začetka specifične terapije in kontomitantne terapije. Nekateri tipični simptomi bolezni so hipohidroza, pekoče bolečine v udih, angiokeratomi, izguba sluha in tinitus, zgodnje kapi, srčni zapleti z hipertrofijo levega prekata, aritmijami in miokardnim infarktom, prizadetost ledvic s proteinurijo, KLB in KLO, gastrointestinalna prizadetost. Za potrditev diagnoze je ob sumu na to bolezen možno izpolniti t.i. «Fabry risk tool» nato pa seveda gensko testiranje, ki je zdaj dostopno tudi z metodo suhe kaplje krvi – DBS test, biopsijo ledvic, določitev encima in specifičnih biomarkerjev. Priporočljivo je presejanje tveganih skupin bolnikov kot npr. z bolečinami v otroštvu, proteinurijo, mladih z možgansko kapjo. Ledvična prizadetost se najprej pokaže z albuminurijo in proteinurijo (v starosti 35 let pri okoli 50% bolnikov, 20% pa jih ima že znižano ledvično funkcijo) Pri moških že pred 50 letom pride do KLO. Zgodnje odkrivanje ima velik pomen pri dobrem izhodu bolezni. Na voljo je zdravljenje s specifičnimi zdravili-nadomeščanje encima ali zdravila z malimi molekulami-šaperoni in je seveda individualno. Obvladovanje redkih in tudi vseh kroničnih bolezni je zahtevno, zato je pomemben multidisciplinaren pristop, dobro sodelovanje v procesu diagnosticiranja, zdravljenja, vodenja, pa tudi raziskovanja. Vloga medicinske sestre je tukaj organizacija zdravljenja, edukacije, podpora bolnikom, deluje kot koordinator in sodeluje v raziskavah. Potrebno je sodelovanje med lečečim zdravnikom, specialisti in Centrom za diagnostiko in zdravljenje Fabryeve bolezni v Slovenj Gradcu.

Ključne besede: Fabryeva bolezen, multidisciplinaren pristop, vloga medicinske sestre.

ABSTRACT

Fabry disease is a rare metabolic disease with an incidence of 1 in 40000. The underlying cause is a mutation in the GLA gene on the X chromosome. As a consequence, the activity of the lysosomal enzyme α -galactosidase (α -GalA) is low. This leads to the accumulation of sphingolipids in cells and tissues and, over the years, to the development of defects in the so-called target organs. The disease also manifests very differently due to different levels of residual enzyme, time of disease detection, initiation of specific therapy and concomitant therapy. Some typical symptoms of the disease are hypohidrosis, burning pain in the extremities, angiokeratomas, hearing loss and tinnitus, early stroke, cardiac complications with left ventricular hypertrophy, arrhythmias and myocardial infarction, renal involvement with proteinuria, CKD and kidney failure, gastrointestinal involvement. To confirm the diagnosis, the so-called "Fabry risk tool"⁶ can be filled and when the disease is suspected, followed by genetic testing, which is now also available with the dry blood drop method - DBS test, renal biopsy, enzyme assay and specific biomarkers.^{3,5}

Screening of at-risk patient groups such as those with childhood pain, proteinuria, young people with stroke is recommended. Renal impairment is first manifested by albuminuria and proteinuria (in about 50% of patients by the age of 35 years, 20% of whom already have reduced renal function) In men, kidney failure occurs before the age of 50. Early detection is of great importance for a good outcome of the disease. Treatment is available with specific drugs - enzyme replacement or small molecule drugs - chaperones, and is of course individualised. The management of rare diseases, and indeed all chronic diseases, is challenging, and a multidisciplinary approach is important, with good collaboration in the process of diagnosis, treatment, management, as well as research. The nurse's role here is to organise treatment, provide education, support patients, act as a coordinator and participate in research. There is a need for cooperation between general practitioner, specialists and the Centre for the Diagnosis and Treatment of Fabry Disease in Slovenj Gradec.

Keywords: Fabry disease, multidisciplinary approach, nurse's role

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ŽEJA KOT NEGOVALNI PROBLEM

Thirst as a nursing problem

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IZVLEČEK

Žeja je pomemben fiziološki dražljaj za vzdrževanje homeostaze telesnih tekočin. Obstaja veliko regulacijskih mehanizmov, ki ohranjajo konstanten volumen vode v telesu, vključno z žejo, kot eden glavnih sistemov za človekovo preživetje. Pred več kot dvema desetletjema sta Porth in Erickson definirala žejo kot subjektivni občutek, tesno povezan z močno željo po pitju, običajno izraženo kot želja po zaužitju tekočine ali hrane z visoko vsebnostjo vode. Avtorja sta opredelila žejo kot klinično težavo v enoti intenzivne nege in pojasnila, da se pogosto pojavlja pri bolnikih s hipovolemijo ali srčnim ali ledvičnim popuščanjem, zlasti na intenzivni negi kljub intravenski hidraciji, ker bolniki ne morejo piti tekočine. Žeja, kot tudi drugi mehanizmi, je pomemben mehanizem pri uravnavanju osmolalnosti plazme. Na nastanek žeje najbolj vpliva hipertoničnost plazme. Zvečanje osmolalnosti plazme za 2-3% povzroči močan občutek žeje. Osmolalnost plazme določa skoraj izključno Na^+ . Osmotski prag za nastanek žeje je 290-295 mOsm/kg. Kot prvo in glavno vlogo pri uravnavanju koncentriranosti seča pa ima ADH, ki se izloča iz hipofize zaradi osmotskih in neosmotskih dražljajev. Osmoreceptorji se odzovejo že pri spremembi osmolalnosti plazme za 1%. Neosmotski dražljaji so številni, eden od njih je efektivni cirkulirajoči volumen, ki preko baroreceptorjev v karotidnem sinusu refleksno povzroči povečano izločanje ADH. Drugi ne osmotski dražljaji so: navsea, post operativna bolečina, nosečnost, zdravila (narkotiki, antipsihotiki klorpropamid).

V prispevku je podrobneje obravnavana pojavnost žeje pri bolnikih zdravljenih na enoti intenzivne terapije in bolnikih zdravljenih s hemodializo kot metodo zdravljenja končne ledvične odpovedi. V opazovalni študiji, Žeja pri pacientih sprejetih v enoto intenzivne nege, je bilo vključenih 220 bolnikov. Žeja je bila ugotovljena pri 76,1% pacientih, s povprečno oceno žeje 5,37 (na lestvici do 10). Med dializno povečanje telesne mase mora biti nižje od 4,0–4,5% suhe teže. Veliko bolnikov ima povečanje med dializne teže večje od te vrednosti, celo 10–

20%. Visoko povečanje med dializne teže je povezano z večjim tveganjem smrti zaradi različnih vzrokov (srčno žilnih, cerebrovaskularnih dogodkov). Poleg tega vodi visoko med dializno povečanje teže do dodatnih tedenskih dializ s posledičnim poslabšanjem kakovosti življenja, in ne nazadnje, tudi s povečanimi stroški. Žeja lahko opazujemo kot negovalni problem, opazujemo njeno pojavnost in intenzivnost, zmanjšujemo jo lahko z ustreznimi negovalnimi intervencijami, hkrati pa je žeja simptom, ki sporoča ogroženo homeostazo v telesu, in je tudi odziv na zdravljenje in prejemanje nekaterih zdravil.

Ključne beseda: homeostaza telesnih tekočin, natrij, osmolalnost plazme, hipovolemija, dializa.

ABSTRACT

Thirst is an important physiological stimulus for maintaining body fluid homeostasis. There are many regulatory mechanisms that maintain a constant volume of water in the body, including thirst, as one of the main systems for human survival. More than two decades ago, Porth and Erickson defined thirst as a subjective feeling related to a strong desire to drink, usually expressed as a desire to consume liquid or food with a high water percentage. The authors identified thirst as a clinical problem in the intensive care unit and explained that it frequently occurs in patients with hypovolemia, cardiac or renal failure, particularly in the intensive care unit despite intravenous hydration, because patients cannot drink fluids. Thirst, as well as other mechanisms, is important in the regulation of plasma osmolality. The hypertonicity of the plasma has the greatest influence on the formation of thirst. An increase in plasma osmolality by 2-3% causes a strong feeling of thirst. Plasma osmolality is determined almost exclusively by Na^+ . The osmotic threshold for thirst is 290-295 mOsm/kg. The first and main role in regulating urine concentration is played by ADH, which is secreted from the pituitary gland due to osmotic and non-osmotic stimuli. Osmoreceptors react to a change in plasma osmolality by 1%. There are many non-osmotic stimuli, one of them is the effective circulating volume, which reflexively causes increased secretion of ADH via baroreceptors in the carotid sinus. Other non-osmotic stimuli are: nausea, postoperative pain, pregnancy, drugs (narcotics, antipsychotic chlorpropamide). In the paper, the occurrence of thirst in patients, treated in the intensive care unit and patients treated with hemodialysis as a method of treatment for end-stage renal failure, is discussed more in detail. In the observational study Thirst in patients admitted to the intensive care unit, 220 patients were included. Thirst was identified with 76.1% patients, with an average thirst score of 5.37 (on a scale of 10). Weight gain during dialysis should be lower than 4.0-

4.5% of dry weight. Many patients have an increase in weight during dialysis greater than this value, even 10-20%. A high increase in weight during dialysis is associated with a higher risk of death from various causes (cardiovascular, cerebrovascular events). In addition, high dialysis weight gain leads to additional weekly dialyses with consequent deterioration of quality of life, and finally, also increased costs. Thirst can be observed as a nursing problem, we can observe its occurrence and intensity, it can be reduced with appropriate nursing interventions, but at the same time, thirst is a symptom that signals a compromised homeostasis in the body and is also a response to treatment and receiving certain medications.

Keywords: homeostasis of body fluids, sodium, plasma osmolality, hypovolemia, dialysis.

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PREHRANSKA OBRAVNAVA DIALIZNEGA PACIENTA

Nutritional care of the dialysis patient

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IZVLEČEK

Zmanjšan apetit, prestroga dieta, uremični toksini in ostali dejavniki lahko privedejo do podhranjenosti in motenj hranjenja pri pacientih s kronično ledvično boleznijo. Tako je prehranska oskrba teh pacientov, še posebej tistih na nadomestnem zdravljenju, vedno individualno prilagojena glede na njihovo klinično stanje, energijske potrebe, potrebe po mikro in makro hranilih, način zdravljenja in rezultate sprotnega prehranskega presejanja, ki se izvede z MIS (Malnutrition Inflammation Score) točkovnikom. Presejanju sledi prehranska obravnava, ki vključuje oceno prehranskega stanja (anamneza, fizikalni pregled- antropometrične meritve, debelina kožnih gub, obsegi delov telesa, test moči stiska roke, bioimpedančna metoda merjenja sestave telesa) in prehransko svetovanje z oceno hranilnega in energijskega vnosa hranil pri kateri se uporabijo metoda jedilnika prejšnjega dne, metoda zapisovanja ocenjene količine obroka, metoda tehtanja ter uporaba računalniškega programa OPKP (odprta platforma za klinično prehrano). Po začetnem pogovoru, kliničnem pregledu ter pregledu laboratorijskih izvidov sledi v pogovor s pacientom o prehranskem statusu, analizira se bolnikov običajni vnos hranil, pripravi prehranski načrt in poda navodila glede ustrezne diete. Predpišejo se tudi enteralni ali parenteralni prehranski dodatki, v kolikor so le-ti potrebni. Pri kroničnem nadomestnem zdravljenju končne ledvične odpovedi se priporoča vnos 1,2-1,4 g proteinov/kg TT/dan visokokakovostnih beljakovin, ki pa obenem prinaša obremenitev s kalijem in fosfati. Dializni bolniki so omejeni še z dnevnim vnosom tekočin, med samim hemodializnim zdravljenjem pa se pojavi še izguba mikrohranil, poveča se potreba po folni kislini, vitaminu C, tiaminu in pirodiksinu, pogosto pa je tudi pomanjkanje železa. Medicinske sestre s specialnimi znanji s področja prehrane imajo tako velik pomen pri odkrivanju prehransko ogroženih bolnikov ter pri načrtovanju primerne prehrane saj se z bolniki na dializi srečujejo dva – oziroma trikrat tedensko, kar je velika prednost pri vrednotenju rezultatov. Primerno hranjen bolnik ima boljšo kakovost življenja, zmanjšano obolevnost in umrljivost.

Ključne besede: prehransko presejanje, prehranska ocena, kronična ledvična bolezen, dializa.

ABSTRACT

Decreased appetite, too strict diet, uremic toxins and other factors can lead to malnutrition and eating disorders in patients with chronic kidney disease. Thus, the nutritional care of these patients, especially those on replacement therapy, is always individually adapted according to their clinical condition, energy needs, needs for micro and macro nutrients, the method of treatment and the results of the current nutritional screening, which is carried out with the MIS (Malnutrition Inflammation Score) scorer. The screening is followed by nutritional treatment, which includes an assessment of nutritional status (anamnesis, physical examination - anthropometric measurements, thickness of skin folds, circumferences of body parts, handgrip strength test, bioimpedance method of measuring body composition) and nutritional counseling with assessment of nutritional and energy intake of nutrients in which the previous day's menu method, the method of recording the estimated amount of the meal, the weighing method and the use of the computer program OPKP (open platform for clinical nutrition) are used. After the initial conversation, clinical examination and review of laboratory results, a discussion with the patient about the nutritional status follows, the patient's usual intake of nutrients is analyzed, a nutritional plan is prepared and instructions are given regarding an appropriate diet. Enteral or parenteral nutritional supplements are also prescribed, if only these are necessary. In the case of chronic replacement therapy of end-stage renal failure, the intake of 1.2-1.4 g of protein/kg body weight/day of high-quality protein is recommended, which at the same time increases levels of potassium and phosphates. Dialysis patients are also limited by their daily fluid intake, and during the hemodialysis treatment itself, a loss of micronutrients occurs, the need for folic acid, vitamin C, thiamine and pyridoxine increases, and iron deficiency is also common. Nurses with special knowledge in the field of nutrition have an important role in identifying nutritionally compromised patients and also in planning a suitable diet, as they work with dialysis patients two or three times a week, which is a great advantage when evaluating results. A properly nutried patient has a better quality of life, reduced morbidity and mortality.

Keywords: nutritional screening, nutritional assesment, chronic kidney disease, dialysis.

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UPORABA BIOIMPENDANCE ZA OCENO PREHRANJENOSTI PACIENTOV S KRONIČNO LEDVIČNO BOLEZNIJO

The use of bioimpedance in the assessment of nutritional status in patients with chronic kidney disease

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IZVLEČEK

Uvod: Podhranjenost je pogosta pri pacientih s kronično ledvično boleznijo (KLB). Ob sprejemu pacienta v bolnišnico medicinska sestra izvede tudi oceno prehranskega stanja. Vprašalnik za oceno prehranskega tveganja in antropometrični parametri ne omogočajo natančnih informacij o sestavi telesa, katere pa lahko pridobimo z metodo bioimpedance. Namen sistematičnega pregleda literature je bil ugotoviti uporabnost bioimpedance s faznim kotom za prepoznavo podhranjenosti pacientov s KLB.

Metode: Pregled literature je bil izveden v podatkovnih bazah PubMed, CINAHL in ScienceDirect s pomočjo ključnih besed. Končni iskalni niz je bil: ("electric* impedance" OR "bioelectric* impedance" OR "bioelectrical impedance analysis" OR bioimpedance OR BIA OR "phase angle" OR PhA) AND (malnutrition OR "nutrition* status" OR undernutrition OR "nutrition* assessment" OR "nutrition* management" OR "nutrition* treatment" OR "nutrition* monitoring" OR "body composition") AND ("chronic kidney diseas*" OR CKD OR "chronic kidney failure"). Kriterij za končno analizo je bil polna dostopnost člankov z ustrezno tematiko v angleškem jeziku. Za prikaz poteka pregleda literature je bil uporabljen diagram PRISMA.

Rezultati: Po pregledu literature je bilo v končno analizo vključenih osem zadetkov. V osmih kvantitativnih raziskavah so potrdili doprinos uporabe bioimpedance s faznim kotom pri prepoznavi ogroženosti KLB pacientov za podhranjenost.

Diskusija in zaključek: Ocena telesne sestave z bioimpedanco s faznim kotom omogoča prepoznavo ogroženosti za podhranjenost pacientov s KLB, kar lahko vpliva na obravnavo, izide zdravljenja in preživetje pacientov s KLB.

Ključne besede: fazni kot; podhranjenost; prehranski status; zdravstvena nega

ABSTRACT

Introduction: Malnutrition is common in chronic kidney disease (CKD) patients. Upon hospital admission, a nurse assesses the patient's nutritional status. Nutritional risk assessment questionnaires and anthropometric parameters don't provide precise information about body composition which can be assessed with bioimpedance method. This study aims to determine the use of the bioimpedance with phase angle to identify the risk of malnutrition in patients with CKD.

Methods: A literature review was conducted in the PubMed, CINAHL, and ScienceDirect databases using the keywords. The final search string was: ("electric* impedance" OR "bioelectric* impedance" OR "bioelectrical impedance analysis" OR bioimpedance OR BIA OR "phase angle" OR PhA) AND (malnutrition OR "nutrition* status" OR undernutrition OR "nutrition* assessment" OR "nutrition* management" OR "nutrition* treatment" OR "nutrition* monitoring" OR "body composition") AND ("chronic kidney diseas*" OR CKD OR "chronic kidney failure"). The criterion for the final analysis was full accessibility to articles in English with relevant topics. A PRISMA diagram was used to present the review process.

Results: After reviewing the results, eight studies were included in the final analysis. In 8 quantitative studies, the contribution of the bioimpedance method in assessing nutritional status for the recognition of malnutrition risk in patients with CKD was confirmed.

Discussion and conclusions: The bioimpedance with phase angle enable recognition of the risk of malnutrition in CKD patients, which can influence treatment management, outcomes, and survival of CKD patients.

Keywords: phase angle; malnutrition; nutritional status; nursing care.

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LIZIN KROŽNIK-KAKO SVETOVATI, KO GRE ZA SLADKORNO BOLEZEN IN KRONIČNO LEDVIČNO BOLEZEN ALI DIALIZO.

Lizin krožnik: Advising on Diabetes and Chronic Kidney Disease or Dialysis

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IZVLEČEK

Lizin krožnik je didaktičen pripomoček za svetovanje o prehrani ob dializi in temelji predvsem na edukaciji o količini kalija in fosfatov.

- Kalij se nahaja skoraj v vseh živilih, največ pa v določenih vrstah sadja in zelenjave, oreščkih, mlečnih in mesnih izdelkih. Dnevni vnos kalija je 2000 - 2500 mg.

- Fosfat je pomemben pri razvoju in ohranjanju močnih kosti. Vir fosfatov so mlečni izdelki, stročnice, oreščki, polnozrnatni izdelki in čokolada, predelane mesnine, hitra prehrana in gazirane pijače (še posebej cola). V glavnem omejimo predvsem vnos živil, v katerih so fosfati umetno dodani. Poleg prehranskih ukrepov si za vzdrževanje normalnih vrednosti fosfatov v krvi pomagamo z uporabo fosfatnih vezalcev. Dnevni vnos fosfatov je od 800-1000 mg.

Lizin krožnik je zaradi vpliva zelenjave, ki ima praviloma nekoliko več kalija razdeljen na tretjine, 1/3 prostora je namenjeno zelenjavi (vlaknine), 1/3 za beljakovinskemu živilu in 1/3 za škrobnemu živilu. Slikovno prikaže, kako sestaviti zdrav krožnik in pri tem ne presehati vnosa določene meje kalija. Vsaka kartica predstavlja približno 120 g živila na tretjini krožnika.

Barve pomenijo vsebnost kalija v 120 g živila, grafično je to Lizina hiša.

Pravila sestavljanja vaših jedi:

- sestavimo jedi po barvi

- na krožniku želimo tri živila

- na krožniku želimo vse barve

- zelena barva pomeni, da živilo vsebuje do 200 mg kalija

- rumena barva pomeni, da živilo vsebuje od 200 do 500 mg kalija

•rdeča barva pa pomeni, da živilo vsebuje nad 500 mg kalij

Pri sami edukacij imamo v mislih Lizinih 6, kar pomeni:

1.KALIJ: do 2500 mg na dan

2.FOSFAT: od 800 - 1000 mg na dan

3.NATRIJ:2000 mg na dan

4.TEKOČINE: do 1 litra (tu se štejejo tudi jogurti, juhe, omake in sadje)

5.KOLIČINA:tretjina krožnika pri vsakem živilu, posebna previdnost pri jedeh, ki imajo visok delež kalija-rdeča barva)

6.PRIPRAVA: Priporočena priprave hrane je kuhanje. Dušenje in cvrtje se odsvetujeta. Priporočamo namakanje zelenjave (npr. krompirja, korenja, repe), kuhanje v večjih količinah vode, za polnejši okus se lahko uporabljajo začimbe in čim manj soli.

KLJUČNA SPOROČILA

Priporočljivo je da dializni bolniku zaužijejo 2000 -2500 mg kalija, 800-1000 mg fosfatov ter do 2000 mg natrija.

Lizin krožnik predstavlja krožnik razdeljen na tretjine, s čemer zadostimo energijskim potrebam nujno potrebnih hranilih.

Ključne besede: kalij, fosfat, smernice.

ABSTRACT

Lizin krožnik is an educational tool for advising on diet during dialysis, focusing primarily on educating about potassium and phosphate intake.

•Potassium is found in almost all foods, especially in certain fruits and vegetables, nuts, dairy, and meat products. The recommended daily intake of potassium is between 2000 - 2500 mg.

•Phosphate is important for the development and maintenance of strong bones. Sources of phosphates include dairy products, legumes, nuts, whole grain products, chocolate, processed meats, fast food, and carbonated drinks (especially cola). It is mainly recommended to limit the intake of foods with artificially added phosphates. In addition to dietary measures, phosphate

binders are used to maintain normal phosphate levels in the blood. The recommended daily intake of phosphates is between 800-1000 mg.

Due to the influence of vegetables, which generally contain more potassium, Liza's krožnik is divided into thirds: 1/3 of the space is allocated to vegetables (fiber), 1/3 to protein foods, and 1/3 to starchy foods. It visually demonstrates how to compose a healthy plate without exceeding the potassium intake limit. Each card represents approximately 120 g of food per third of the plate.

The colors indicate the potassium content in 120 g of food, represented graphically as Liza's House. The rules for composing your meals are:

- Compose meals by color
- Aim for three types of food on the plate
- Aim for all colors on the plate

Colors and Potassium Content:

- Green: Food contains up to 200 mg of potassium
- Yellow: Food contains 200 to 500 mg of potassium
- Red: Food contains over 500 mg of potassium

Liza's 6 Guidelines:

- 1.Potassium - up to 2500 mg per day
- 2.Phosphate - 800-1000 mg per day
- 3.Sodium - 2000 mg per day
- 4.Fluids - up to 1 liter per day (includes yogurts, soups, sauces, and fruit)
- 5.Quantity - a third of the plate for each food type, with special caution for foods with high potassium content (red color)
- 6.Preparation - Recommended cooking methods include boiling. Steaming and frying are discouraged. It is advisable to soak vegetables (e.g., potatoes, carrots, turnips), cook in large amounts of water, and use spices for flavoring with minimal salt.

KEY MESSAGES

•It is recommended that dialysis patients consume 2000-2500 mg of potassium, 800-1000 mg of phosphates, and up to 2000 mg of sodium.

•Lizin krožnik represents a plate divided into thirds, meeting the energy needs of essential nutrients.

Keywords: Potassium, Phosphate, guidelines.

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*Ko boste močnejši na enem področju,
boste ugotovili, da so postala
obvladljiva tudi druga.
In naslednja stvar, ki jo boste
opazili je to, da iz sadike rastete
v visoko čudovito drevo, ki
ima korenine zasidrane globoko v zemlji.
Z drugimi besedami,
uspevali boste v celovito, čudovito, skrivnostno
in neprimerljivo stvar, imenovano*

ŽIVLJENJE!

-Louise Hay