POS-567

END-STAGE KIDNEY DISEASE IN CALIFORNIA'S CENTRAL VALLEY: WHY SO MUCH KIDNEY DISEASE IN THE US "BREADBASKET"?

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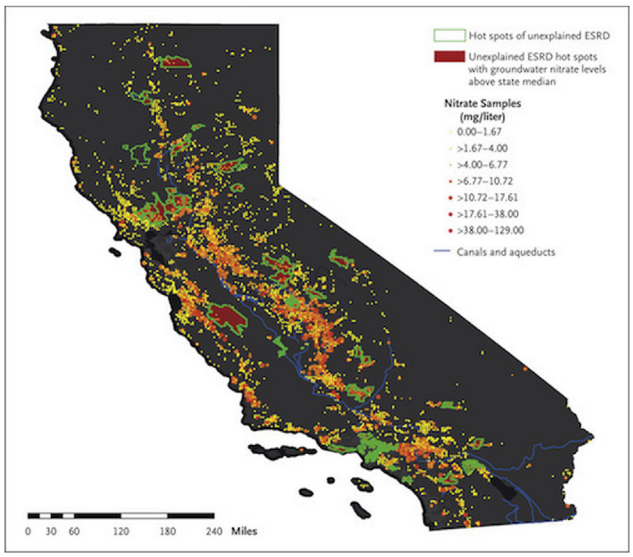
Introduction: California's Central Valley has one of the highest incidences of end-stage kidney disease (ESKD) in the United States. This region shares climate, topography, and agricultural activity with international regions experiencing epidemics of CKD among agricultural workers, termed chronic kidney disease of unknown etiology (CKDu). It remains unclear whether agricultural workers in California are also vulnerable to CKDu. In 2020 we demonstrated that areas with high numbers of people with undefined ESKD in California overlap with areas of high agricultural activity as measured by ground water nitrate (Figure 1). To further investigate risk factors for unexplained ESKD, we developed a primary survey to test the following hypotheses: 1) working in agriculture, 2) residence in agriculture areas, and 3) poorer access to healthcare.

Figure 1: Nitrate Levels in Groundwater and Unexplained End-Stage Renal Disease in California.



Methods: We plan a case-control study to recruit 370 patients with unexplained ESKD and 370 age and sex-matched controls with known causes of ESKD (glomerular disease or polycystic kidney disease) from dialysis units in pre-identified hot-spots of unexplained ESKD. We created an electronic questionnaire (*Dialysis Occupational and Environmental Health Questionnaire*) using Qualtrics to ascertain patient's residence and workplace history, clinical history, agricultural work history, pesticide exposure, and healthcare access. For the latter two topics, we adapted questions from previously validated or CDC-endorsed approaches (*Behavioral Risk Factor Surveillance System* and *Agricultural Health Survey)*. Participants are expected to complete the questionnaire on their phones or tablet. The ascertained data will be linked to publicly available data from California on groundwater and pesticide application to create average and/or cumulative patient exposures, and test their associations with unexplained ESKD.

Results: We have developed a bilingual English and Spanish electronic survey with 58 questions: 33 questions about residence, occupation, and agricultural activity, 10 questions about healthcare access, 11 questions about patient's health before ESKD, and 4 questions about other demographic data. A pilot test for cognitive debriefing was performed among our research group to examine our survey regarding factors such as relevance, clarity of language, and feasibility on answering it on a phone's screen. An additional pilot with dialysis facility social workers and charge nurses is planned, prior to implementation in dialysis facilities. By the time of WCN 2022 we aim to have completed data collection and present preliminary data.

Conclusions: We developed a self-administered survey which ascertain occupational and environmental exposures, as well as healthcare access, among patients undergoing dialysis. By investigating the high incidence of ESKD in California's Central Valley, if we find that agricultural work or living in an area with high agricultural activity is associated with unexplained ESKD, this can promote further work to study specific occupational and environmental exposures, and potentially identify a novel cause of ESKD. If the high incidence of unexplained ESKD is mostly due to barriers or low use of healthcare, the consequent need for costly and life-limiting dialysis should motivate investment in preventive health resources.

No conflict of interest

POS-568

CLINICAL OBSERVATION OF FRACTIONATED PLASMA SEPARATION AND ADSORPTION MODE INTEGRATED WITH CONTINUOUS VENO-VENOUS HAEMOFILTRATION APPLIED IN THE TREATMENT OF PATIENTS WITH SEVERE POISONING

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Introduction: To observe the clinical efficacy and safety of fractionated plasma separation and adsorption mode integrated with continuous veno-venous haemofiltration (FPSA-CVVH) applied in the treatment of severe poisoning.

Methods: We conducted a retrospective analysis on 14 hospitalized patients (8 males and 6 females, median age 41) with severe poisoning during the period from January 2019 to February 2021. Among the patients included in this study, there were 7 cases of pesticide poisoning (4 cases were caused by paraquat, others were caused by diquat, glyphosate, sodium dimethyltetrachloride, osthol, chloropyrhion or methamidophos), 5 cases of highly protein-bound drug poisoning (sodium valproate, amlodipine, estazolam, quetiapine, olanzapine or ziprasidone) due to suicide, and 2 cases of fish gall poisoning. All patients received the treatment of FPSA-CVVH. Specifically, their whole blood was separated by a plasma component separator (EC50W), with the blood flow rate and the plasma separation rate setting at 180-250ml/min and 80-100 ml/min respectively; their plasma was filtered by a blood filter (AV600) with an ultrafiltration rate of 33 ml/min. Then the concentrated plasma passed through a neutral resin adsorption column (HA230) and an anion resin adsorption column (BRS350), before being transfused into the body. The process of FPSA-CVVH treatment lasted 8 hours, and a sequential therapy of CVVH lasting 16 hours was also performed for 3 consecutive days. The combination of citric acid and low molecular weight heparin was applied in vitro, in order to prolong the activated coagulation time of whole blood by 1.5 - 2 times or to 200 seconds. We observed the prognosis and adverse reactions of patients with severe poisoning treated by FPSA-CVVH.

Results: Before medical intervention, all patients got a score of 3 in the poisoning severity score (PSS) test, and they expressed symptoms or signs of severe and life-threatening poisoning due to the excessive intake of poisons or drugs. There were 4 cases of mixed pesticide and/or drug poisoning. 5 patients (35.7%) received mechanical ventilation, 3 patients (21.4%) received vasoactive drugs, 9 patients (64.3%) exhibited acute renal injury, 5 patients (35.7%) exhibited acute liver injury, and 7 patients (50.0%) exhibited pulmonary infection. All patients received emesis, gastric lavage, catharsis, and symptomatic treatment. We observed a significant decline in the levels of clinical-monitored poisons or drugs after FPSA-CVVH treatment. 10 patients (71.4%) recovered and left the hospital, with normally hepatic and renal functions during the follow-up period. Other 4 patients (28.6%) gave up treatment or died during hospitalization, including 3 cases of paraquat (orally taking 15 to 30ml stock solution) and 1 case of diquat (orally taking 200g). During the period of FPSA-CVVH treatment, 3 patients changed the filter due to blood coagulation. And other 2 patients exhibited bleeding, such as epistaxis and gross hematuria (through catheterization), as adverse reactions, which vanished after abandoning treatment or reducing the amount of anticoagulant drugs.

Conclusions: FPSA-CVVH may effectively eradicate highly protein-bound poisons, improve hepatic and renal functions, and increase the treatment success rate of patients with severe poisoning. The treatment

shows a low incidence of adverse reactions and may be applied well in clinic.

No conflict of interest

POS-569

DIALYSIS MODALITY UTILISATION PATTERNS AND MORTALITY IN OLDER PERSONS INITIATING DIALYSIS IN AUSTRALIA AND NEW ZEALAND

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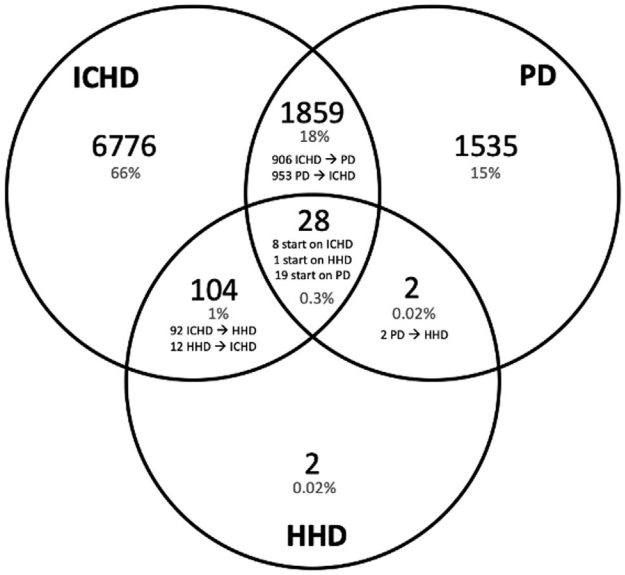
Introduction: The benefits of dialysis in the older population remain highly debated, particularly for certain dialysis modalities. This study aimed to explore the dialysis modality utilisation patterns between in-centre haemodialysis (ICHD), peritoneal dialysis (PD) and home haemodialysis (HHD) and their association with outcomes in older persons.

Methods: Older persons (>75 years) initiating dialysis in Australia and New Zealand from 1999 to 2018 reported to the Australia and New Zealand Dialysis and Transplant (ANZDATA) registry were included. The primary outcomes were the characterisation of dialysis modality utilisation patterns and their association with survival in older persons initiating dialysis. Secondary outcomes were the causes of death and dialysis withdrawal.

Results: A total of 10,306 older persons initiated dialysis over the study period. Of these, 6776 (66%) and 1535 (15%) were exclusively treated by ICHD and PD, respectively, while 136 (1%) ever received HHD during their dialysis journey. The remainder received both ICHD and PD: 906 (9%) started their dialysis journey on ICHD and 953 (9%) on PD. Different person characteristics were seen across dialysis modality utilisation patterns. Over the study period, 7700 (75%) persons died, of whom 76% and 23% were on ICHD and PD at the time of death, respectively, while 2291 (22%) were still alive and on dialysis at the end of the study period. Adjusted hazard ratios (HR) for death compared to ICHD patients were 1.60 (95%CI 1.49-1.73), 1.23 (95%CI 1.13-1.34), 0.75 (95%CI 0.69-0.82) and 0.57 (95%CI 0.44-0.74) for PD only, ICHD to PD, PD to ICHD and ever on HHD, respectively. Dialysis withdrawal was an important cause of death and varied according to person characteristics and utilisation pattern.

Figure 1. Dialysis modality utilisation patterns in older persons.



HHD = home haemodialysis; ICHD = in-centre haemodialysis; PD = peritoneal dialysis

Table 1. Outcomes at end of follow-up by dialysis modality utilisation patterns.

	ICHD	ICHD to PD	PD	PD to ICHD	Ever on HHD	TOTAL
N=	6 776	906	1 535	953	136	10306
Kidney transplantation	6 (0%)	0 (0%)	3 (0%)	0 (0%)	0 (0%)	9 (0%)
Kidney function recovery for over 30 days	178 (3%)	33 (4%)	36 (2%)	22 (2%)	2 (1%)	271 (3%)
Loss to follow-up	27 (0%)	3 (0%)	2 (0%)	3 (0%)	0 (0%)	35 (0%)
Still alive on	**1561 (23%)**	**108 (12%)**	**357 (23%)**	**211 (22%)**	**54 (40%)**	**2291 (22%)**
ICHD	1561 (23%)	45 (5%)	---	190 (20%)	24 (18%)	1820 (18%)
PD	---	63 (7%)	357 (13%)	21 (2%)	0 (0%)	441 (4%)
HHD	---	---	---	---	30 (22%)	30 (0%)
Death while on	**5004 (74%)**	**762 (84%)**	**1137 (74%)**	**717 (75%)**	**80 (59%)**	**7700 (75%)**
ICHD	5004 (74%)	230 (25%)	---	612 (64%)	34 (25%)	5880 (57%)
PD	---	532 (59%)	1137 (74%)	105 (11%)	0 (0%)	1774 (17%)
HHD	---	---	---	---	46 (34%)	46 (0%)

HHD = home haemodialysis; ICHD = in-centre haemodialysis; N = number; PD = peritoneal dialysis.

Table 2. Follow-up duration, mortality incidence rate and survival by dialysis modality utilisation patterns.

	ICHD only	ICHD to PD	PD only	PD to ICHD	Ever on HHD	TOTAL
N=	6776	906	1535	953	136	10 306
Median (IQR) follow-up duration (in years)	2.2 (0.8-4.3)	2.1 (1.1-3.8)	1.9 (0.9-3.2)	3.7 (2.2-5.8)	4.0 (2.2-6.0)	2.3 (0.9-4.2)
Time at risk (in years)	19269	2480	3401	3975	631	29757
Mortality incidence rate (per 1000 person-years)	260	307	334	180	127	259
3-month survival (%)	92.7 (92.0-93.3)	97.1 (95.8-98.0)	95.0 (93.8-96.0)	99.4 (98.6-99.7)	100	94.1 (93.6-94.6)
6-month survival (%)	86.7 (85.9-87.5)	91.9 (90.0-93.6)	90.1 (88.4-91.5)	98.1 (97.0-98.8)	99.2 (94.7-99.9)	88.9 (88.3-89.5)
1-year survival (%)	78.2 (77.1-79.1)	81.6 (78.9-84.0)	79.1 (76.9-81.1)	94.9 (93.2-96.1)	96.1 (90.8-98.3)	80.4 (79.6-81.1)
5-year survival (%)	28.5 (27.3-29.8)	20.4 (17.6-23.3)	14.3 (12.2-16.5)	42.5 (39.1-45.9)	55.7 (45.5-64.7)	27.6 (26.6-28.6)
10-year survival (%)	4.7 (4.0-5.4)	1.9 (1.0-3.3)	---	8.1 (6.0-10.6)	22.1 (13.3-32.3)	4.4 (3.8-5.0)

HHD = home haemodialysis; ICHD = in-centre haemodialysis; IQR = interquartile range; N = number; PD = peritoneal dialysis.

Conclusions: This study showed that dialysis modality utilisation patterns in older persons is associated with mortality, independent of person characteristics. Modality utilisation patterns in this population appears to be goal-oriented and personalised. Dialysis withdrawal appears to be an important cause of death in older persons and appropriate supportive care should be provided to those people, while respecting personal choice if modality transfer is not desired in the event of technique failure.

Conflict of interest

Potential conflict of interest:

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POS-570

PERCEIVED BARRIERS AND FACILITATORS OF ADHERENCE TO HEMODIALYSIS DIETARY AND FLUID RESTRICTIONS: INSIGHTS FROM A QUALITATIVE STUDY

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Introduction: Worldwide, hemodialysis is the most common renal replacement therapy for patients with end-stage renal disease (ESRD). Hemodialysis can be a very stressful treatment, due to its complex dietary and fluid control demands that are crucial for dialysis adequacy, patients' quality of life, and survival. Consequently, non-adherence is