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ASSOCIATION OF SYSTOLIC BLOOD PRESSURE AND RESIDUAL KIDNEY FUNCTION DECLINE AMONG HEMODIALYSIS PATIENTS:

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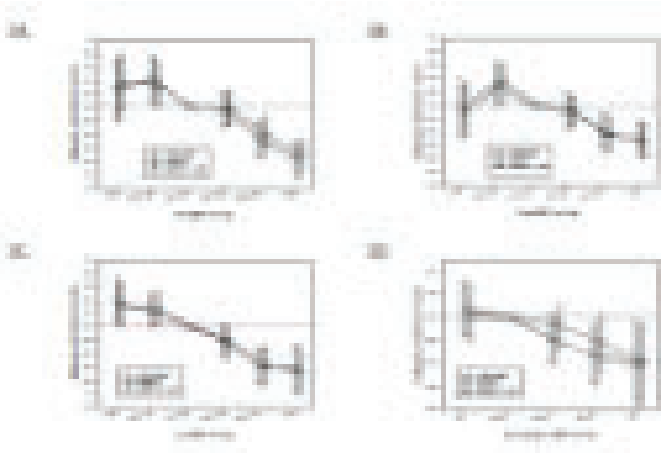
Residual kidney function (RKF) decline has been associated with negative health outcomes. Systolic blood pressure (SBP) shows a u-shaped or j-shaped association with negative health outcomes. The association between SBP and RKF, particularly in hemodialysis (HD) patients has not been examined.

We retrospectively studied a cohort of 6,659 patients who initiated HD from January 2007 to December 2011, with renal urea clearance (KRU) data at baseline and one year after dialysis initiation. KRU change was defined as the measurement at the fifth patient quarter (PQ) subtracted by the measurement at the first PQ. We studied SBP measurements and their association with KRU change, including pre-SBP, post-SBP, low-SBP, and max change in SBP. The association between SBP and KRU decline was assessed using linear regression with various levels of adjustment.

The mean age was 62 ± 14 years, 35% were female, 26% were African American, and 69% had diabetes. The median (interquartile range(IQR)) baseline KRU was 3.79 (2.26 – 5.92) mL/min, and the median (IQR) of KRU at the fifth patient quarter was 2.30 (1.05, 4.15) mL/min. In the linear regression model, SBP trended towards a negative relationship between SBP and KRU change, which remained after adjustment for covariates. The two groups with the highest baseline SBP were associated with a significant decline in KRU across all measures of SBP, with the exception of max change in SBP [Figure 1A-1D].

In HD patients, a higher SBP was generally associated with a greater decline in KRU across various measurements of SBP. The implications of these results is that SBP measurements can serve as a marker for kidney function decline, and can lead to earlier detection and treatment for patients.



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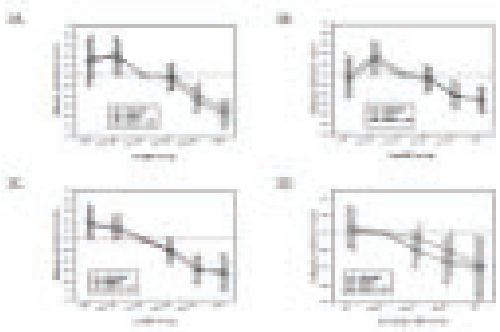

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EVALUATION OF POTENTIAL PHYSICOCHEMICAL INTERACTIONS OF ORALLY ADMINISTERED, NON-ABSORBED ION-EXCHANGE RESINS WITH VEVERIMER:

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Polypharmacy is common in patients with CKD due to the presence of multiple comorbidities. Non-absorbed ion-exchange resins are widely used to treat fluid and electrolyte disorders in the CKD patient population. Veverimer is an investigational, orally administered, non-absorbed polymer drug being developed as a treatment for metabolic acidosis in patients with CKD. We conducted in vitro studies to evaluate the potential for veverimer to interact with orally administered, ion-exchange resins.

The potential for physical interactions (e.g. aggregation) between veverimer and non-absorbed ion exchange resins (potassium binders sodium polystyrene sulfonate, Lokelma, Veltassa; phosphate binder Renvela) was assessed in vitro through optical microscopy and laser diffraction analysis of particle size distribution (PSD). In vitro binding assays were used to determine the ion (e.g. phosphate, potassium, chloride) binding capacities of the drugs.

No physical interactions such as aggregation were observed between veverimer and non-absorbed ion-exchange resins when incubated in water, simulated gastric fluid, or simulated intestinal fluid. Microscopic evaluation of individual drugs and mixed suspensions of veverimer and another drug in each medium demonstrated that the drugs remain dispersed. PSD analysis corroborated the microscopic observations; no aggregates were detected, and the size distribution of the mixtures were representative of the mixed component drugs.

The binding assay for chloride detected essentially no change in the binding capacity of veverimer in mixtures with each drug, in comparison to the nominal binding capacity of veverimer (94% - 101%). Similarly, the binding assay for phosphate detected a negligible change in the phosphate binding capacity of Renvela when mixed with veverimer (88%). The binding analysis for potassium detected essentially no change in the binding capacity of sodium polystyrene sulfonate, Lokelma, and Veltassa in the presence of veverimer (96% – 103%).

In vitro studies suggested that clinically significant drug-drug interactions between veverimer and orally administered, non-absorbed ion-exchange resins are unlikely.

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MINIMAL CHANGE DISEASE AFTER HEMATOPOIETIC STEM CELL TRANSPLANT:

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Nephrotic syndrome after hematopoietic stem cell transplant (HSCT) is rare and is usually associated with graft-versus-host disease (GVHD). Membranous nephropathy (MN) is the most frequently reported pathology followed by minimal change disease (MCD). We report a case of MCD post-allogenic HSCT that responded adequately to Prednisone.

A 53-year-old male with a past medical history of myelodysplastic syndrome status-post unrelated allogenic HSCT (with an 8/8 human leukocyte antigen match) 3 months prior, maintained on Tacrolimus, presented with acute kidney injury (AKI) and nephrotic syndrome. Physical examination was significant for lower extremity edema and no skin or abdominal findings suggestive of GVHD. Labs were significant for serum creatinine 3.1 mg/dL (baseline 0.9-1.1 mg/dL), BUN 43 mg/dL (normal 9-24 mg/dL), bicarbonate 21 mmol/L (normal 22-30 mmol/L), and albumin 3.5 g/dL (normal 3.4-5.4 g/dL). Urine analysis showed 3+ protein, 1+ blood, and 11-25 RBCs/high power field. Urine protein to creatinine ratio was 14.6 g/g (normal <0.2 g/g). Immunoserological testing and complement levels were normal. Kidney ultrasound was unremarkable. Kidney biopsy showed acute tubular injury on light microscopy and diffuse podocyte foot process effacement on electron microscopy consistent with MCD. He was started on Prednisone 1 mg/kg/day. He required hemodialysis for 5 weeks after which he started showing signs of recovery. At 7 weeks, his proteinuria improved to 2.7 g/g, and his kidney function completely recovered.

Nephrotic Syndrome after HSCT is a rare event with a reported incidence of 1%. The pathophysiology remains unclear but is thought to be related to a post-transplant glomerular manifestation of GVHD. Although rare, MCD should be considered in the differential diagnosis of AKI post-HSCT without other clinical manifestations of GVHD. Other causes of AKI should be excluded. A kidney biopsy is key to differentiate MCD from other causes of AKI and nephrotic syndrome such as MN. Most cases usually have a benign course and respond well to steroids and immunosuppressive therapy.

MCD after HSCT is rare and should be considered in the differential diagnosis of AKI and nephrotic syndrome in patients with HSCT after excluding other causes.

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NOCARDIA FARCINICA PERITONITIS IN A PATIENT ON PERITONEAL DIALYSIS:

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Nocardia is a rare pathogen, often seen in immunocompromised hosts, which usually affects the lungs or central nervous system (CNS). Isolated peritonitis due to *Nocardia* in patients on peritoneal dialysis (PD) is rare despite the common presence of *Nocardia* in the soil and water. We describe a case of *Nocardia Farcinica* peritonitis in a patient on PD that had no other associated lung or CNS manifestations.

A 79-year-old male with a history of end-stage kidney disease secondary to diabetic nephropathy on PD presented with fever, malaise, and generalized abdominal pain. Vital signs were unremarkable. Physical exam revealed a diffusely tender abdomen with an intact PD catheter and normal skin findings. WBC count was elevated at 17 k/uL (normal 3.7 – 11 k/uL). CT chest and abdomen showed ascites but no clear source of infection. Peritoneal fluid cell count was positive for >600 WBCs with 66% neutrophils. Preliminary PD fluid culture was positive for partially acid-fast, beaded, branching bacilli. Routine PD fluid culture failed to grow any organism at 5 days. IV meropenem and IV trimethoprim-sulfamethoxazole (TMP-SMX) were started due to the high concerns for *Nocardia*. *Nocardia Farcinica* in the PD fluid was detected by DNA-based gene sequencing confirming our diagnosis of *Nocardia*