KSN 2016 Abstract Submission

Acute Kidney Injury

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ARN – anticoagulant related nephropathy: lessons from patients and experimental animals

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Background: We have recently identified a new clinical syndrome in patients receiving warfarin for anticoagulation. This syndrome has been named warfarin-related nephropathy (WRN), and patients with chronic kidney disease (CKD) appear to be particularly susceptible. WRN is defined as an acute increase in INR to greater than 3.0, followed by evidence of acute kidney injury (AKI) within a week of the INR increase, defined as a sustained increase in serum creatinine of greater than or equal to 0.3 mg/dl. The AKI cannot be explained by any other factors, and the kidney biopsy demonstrates extensive glomerular hemorrhage with tubular obstruction by red blood cells. Beyond AKI, WRN is a significant risk factor for mortality within the first two months of diagnosis and it accelerates the progression of CKD. CKD is the most important risk factor for WRN, and in CKD patients on warfarin who experience an increase in INR to > 3.0, WRN is seen in 33 – 37% of the patients

Methods: We developed an animal model to study WRN/ARN. 5/6 nephrectomy rats were treated with warfarin or dabigatran in different doses, serum creatinine and morphology of the kidney were analyzed.

Results: 5/6 nephrectomy rats treated with different anticoaulants, including warfarin and dabigatran, show changes in serum creatinine and kidney morphology similar to those seen in patients with excessive anticogulation. Animals treated with different anticuagulants had an acute increase in serum creatinine, increased hematuria and occlusive red blood cell casts with acute tubular necrosis in the kidney.

Conclusion: Our data and literature suggest that WRN-like syndromes are not confined to anticoagulation with warfarin, but may be seen with the newer oral anticoagulants coming into clinical use. We have thus coined the term anticoagulant-related nephropathy (ARN) to encompass the possibility that other anticoagulant drugs may put patients at risk.Nephrologists and renal pathologists should be aware about this serious complication of anticogulation therapy.

Keywords: anticoagulation, acute kidney injury , renal pathology , glomerular hemorrhage