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Anticoagulant related nephropathy: Lessons from patients and experimental animals

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. Recent evidences 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. We developed an animal model to study ARN. 5/6 nephrectomy rats treated with warfarin or dabigatran showed increase in serum creatinine and morphology in the kidney similar to humans. Nephrologists and renal pathologists should be aware about this serious complication of anticoagulation therapy.

Biography

Sergey V Brodsky has completed his MD and PhD in 1992 and 1995, respectively from North Ossetian Medical Academy in Russia. His research interests include renal pathology, renal physiology, vascular biology and angiogenesis. After finishing his Residency in Anatomic Pathology and a fellowship in Renal Pathology in 2009, he currently works as a Renal Pathologist at Ohio State University, USA. He has published more than 95 papers in peer-reviewed journals and book chapters.

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