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Disease-Specific Risk of Venous Thromboembolic Events in Idiopathic Glomerulonephritis

Sean Barbour[1], Allen Greenwald[3], Ognjenka Djurdjev[1], Adeera Levin[1], Michelle A. Hladunewich[2], Daniel C. Cattran[2], Heather N. Reich[2]
[1]University of British Columbia, Vancouver, BC, Canada, [2]University of Toronto, Toronto, ON, Canada, [3]Queen's University, Kingston, ON, Canada

BACKGROUND: The nephrotic syndrome is a known risk factor for the development of venous thromboembolic events (VTEs). While membranous glomerulonephritis (MGN) is thought to be associated with an increased risk of VTE compared to other forms of idiopathic glomerulonephritis (GN), this has not been confirmed in a large population of patients with only primary glomerular disease. Accordingly we sought to identify the disease-specific risk of VTE in patients with idiopathic GN.

METHODS: We reviewed a large inception cohort of patients with biopsy proven idiopathic MGN (n=395), focal segmental glomerulosclerosis (FSGS n=370), and IgA nephropathy (IgAN n=548) followed prospectively for a minimum of 12 months in the Toronto GN Registry. All episodes of VTE recorded in the Registry were tabulated. Cox proportional hazards modelling was used to evaluate the association between VTE risk and type of idiopathic GN, adjusting for the degree of proteinuria, serum albumin, age and sex.

RESULTS: At baseline the cohort had a mean age of 42 years, was 63% male, had a creatinine clearance of 73ml/min/1.73m2 with proteinuria of 3.1g/day, and 46% had proteinuria >3.5g/day. A total of 44 patients (3.35% of subjects) with idiopathic GN had a VTE during a median follow-up of 63 months. The risk of VTE was highest in patients with FSGS (11 events, HR 7.8, 95% CI 1.7-35.2, $p<0.01$) and MGN (31 events, HR 22.0, 95% CI 5.3-92.1, $p<0.01$) compared to patients with IgAN (2 events, reference group). Proteinuria at the time of first clinical assessment and during follow-up were also predictive of the risk of VTE ($p<0.01$ for trend test). After adjustment for the degree of proteinuria in the multivariate analysis, the underlying pathologic diagnosis remained an independent predictor of the risk of VTE.

CONCLUSION: In summary, in this large cohort of patients with idiopathic GN, the underlying pathologic diagnosis is an important predictor of the risk of VTE. Even after adjustment for the degree of proteinuria, MGN is associated with the highest risk of VTE, followed by FSGS and IgAN.