Identification of Thrombotic Risk for Men with Prostate Cancer: A Pilot Study Evaluating Hemostatic Status Using Thromboelastography

Introduction and Objectives: Coagulopathy is the second most common cause of death from cancer, and thrombotic complications are amplified in prostate cancer with systemic therapy. We aim to help identify patients at higher risk for thrombotic events in patients with prostate cancer with well defined hemostatic tests, novel in their application to patients with advanced prostate cancer.
Materials and Methods: We performed intensive haemostatic studies in 27 patients (age range 59-88 years) at various stages (non-metastatic, metastatic, castration resistant) as compared to an age-matched control group (biopsy negative, n=9). Thromboelastography (TEG) is a global haemeostatic test that quantifies a vesicoelastic trace that reflects the kinetics of clotting. The study included whole blood TEG and flow cytometry analysis of microprticles (MPs) in plasma using Annexin V- FITC and anti-tissue factor - PE.
Results: Analysis of the data revealed hypercoagulable state in all patients with advanced disease. The mean values for TEG parameters in the patients were: R: 6.01 vs 9.8 minutes in the control group (P=0.009), alpha angle: 68.3 (controls 53.1 degrees), MA: 69.3 vs 57.9 mm in controls (p=0.053), and CI: 3.32 vs 0.7 in controls (P=0.05). Microparticle assays revealed significant elevation in the number of microparticles carrying tissue factor in these patient groups compared to the control group [5,142 MPs/uL compared to 2,914 MPs/ uL (p=0.05)], suggesting a link between elevated tissue factor and the hypercoagulability.
Conclusions: To our knowledge, this is the first report for the use of TEG in patients with advanced prostate cancer. These results would suggest the rationale for a larger cohort study to determine the utility of these simple tools for evaluation of patients' thrombotic potential and may help identification of those who require anticoagulant prophylaxis towards the end of their cancer journey.