Acquired FII and FV inhibitors upon aortic bioprosthetic valve replacement

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Introduction: a 82-year-old man underwent an aortic bovine pericardial bioprosthetic valve replacement in August 2013. Routine coagulation parameters (aPTT, PT) were within reference ranges within the first 3 weeks after surgery. However, as from postoperative day 20 on, both PT and aPTT were progressively prolonged (nadir on day 33: PT 17%, INR 4.04, aPTT 141 sec). Thrombin time was unmeasurable, using a reagent based on bovine thrombin. Vitamin K administration failed to correct the coagulation times and high fibrinogen levels were not consistent with DIC. Overt bleeding did not occur.

Investigation: aPTT and PT did not correct upon mixing of patient plasma with normal pooled plasma (1:1), suggesting the presence of an inhibitor. Coagulation factor assays showed a significant decrease in FV activity (<1%), with low to normal values for all other coagulation factors in undiluted plasma (FII: 29%, FVII: 81%, FVIII: 97%, FIX: 115%, FX: 83%, FXI: 56%, FXII: 42%). Higher values for all coagulation factors were measured in 1:5 and 1:10 diluted plasma (FII: 98%, FVII: 93%, FVIII: 270%, FIX: 177%, FX: 117%, FXI: 68%, FXII: 49%), except for FV, which remained <1%. An inhibitor to FV was detected at 16 Bethesda units (BU). As no inhibitor against human FII was detected (<1 BU), thrombin time measurement was repeated using a reagent based on human thrombin, demonstrating normal results (16 sec, reference:<21 sec).

Conclusion: These laboratory findings are consistent with the presence of a FV inhibitor and a bovine FII inhibitor that does not cross react with human FII. These inhibitors have been described upon the perioperative use of fibrin sealants, containing bovine FII. As no such material was used here, the emergence of FII and FV inhibitors was most likely induced by the bioprosthetic valve replacement.