Thrombus in the Patient After CPB

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Introduction
Massive intravascular thrombosis in cardiac surgery is a rare yet catastrophic occurrence. Thrombosis in the heart or the peripheral venous or arterial circulation has been reported in patients undergoing cardiac surgery, thoracic aortic surgery, and in patients requiring hypothermic circulatory arrest (HCA). Implicating factors in this catastrophic complication include disseminated intravascular coagulation, antifibrinolytic therapy, heparin-induced thrombocytopenia, over-transfusion of pro-coagulant blood products, use of pro-coagulant pharmacologic agents (rVIIa), and underlying hypercoagulable states. Inherited hypercoagulable states that may predispose to thrombotic complications after cardiac surgery include Factor V Leiden mutation, prothrombin gene mutations, protein C and S deficiencies, and disorders of fibrinolysis. The etiologies and management of this complication is discussed.

Case:
54 year old male presenting for reoperation aortic valve replacement and possible aortic root replacement for endocarditis and intracardiac abscess. Five years earlier, the patient underwent an aortic valve replacement with a mechanical aortic valve for aortic stenosis with a congenital bicuspid aortic valve. He currently has a 2 week history of fatigue and SOB and a recent fever. WBC= 20K, Hct=40%, Electrolytes are normal. BUN/Creat 45/1.6. Echocardiogram revealed a vegetation on the surface of the prosthetic valve which was mobile and prolapsing through the valve with systole. The aorto-mitral fibrous tissue appeared slightly thickened and an abscess could not be ruled out.

Intraoperative TEE confirmed intracardiac abscess and an aortic root replacement was performed without complication. Heparin requirements were high, as the patient required heparin 400 U/kg for therapeutic ACT and he required multiple intraoperative heparin doses to keep the Hepcon > 2 U/ml despite ACT> 400sec. Epsilon aminocaproic acid was the antifibrinolytic agent used. Upon completion of the surgery and weaning from CPB, the patient had adequate cardiac function and was weaned from CPB with low dose norepinephrine. The protamine was given (350 mg to reverse total heparin 50,000U), over 15 minutes. A few minutes after completion of
the protamine dose, sudden hemodynamic collapse ensued. A protamine reaction was suspected and calcium and ephedrine and low dose epinephrine were given. There was no response and the patient was in PEA. TEE revealed intracardiac thrombus extending from the LV into the aorta and into the aortic arch. The patient was emergently re-heparinized and cannulated and placed back on CPB.

DISCUSSION

References


31. Donahue BS, discussion: Thrombosis after deep hypothermic circulatory arrest with antifibrinolytic therapy: is factor V leiden the smoking gun? Anesthesiology 2002; 97