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Anaesthesia Challenges in Management of Antiphospholipid Syndrome with Mobile Right Heart Thrombus in Urgent Lower Section Caesarean Section

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ABSTRACT

Antiphospholipid syndrome (APS) is an autoimmune disease characterized by antiphospholipid antibodies. APS during pregnancy can lead to complications such as recurrent foetal loss and placental insufficiency due to thrombotic events. This case report presents the management of a 31-year-old woman with APS and ischemic placental insufficiency who required an urgent caesarean section. The patient had a history of missed abortion and cardiac manifestations, including mobile right heart thrombus. A multidisciplinary team collaborated to develop treatment strategies and minimize the risks associated with thrombus dislodgment. The patient underwent successful surgery and delivered a healthy baby. Standardized protocols for managing similar cases need to be developed through further research and collaboration.

Keywords: Antiphospholipid syndrome, thrombotic events, multidisciplinary team, mobile right heart thrombus, caesarean section, anaesthesia.

INTRODUCTION

Antiphospholipid syndrome (APS) is an autoimmune disease characterized by antiphospholipid antibodies. It can lead to various clinical manifestations, including thrombotic events, recurrent foetal loss, and placental insufficiency [(1)] Cardiac manifestations resulting from immune-mediated injuries are also common. Emergency surgeries present challenges in optimizing the patient's condition [(2).] Mobile Right Heart Thrombus (MRHT), a rare and life-threatening complication of APS, poses a significant risk during anaesthesia as it can dislodge and cause pulmonary embolism [(3)]. This case report highlights the management challenges encountered in a pregnant woman with APS and MRHT requiring an urgent caesarean section.

CASE PRESENTATION

A 31-year-old woman at 36.2 weeks of pregnancy, with a history of APS, presented with symptoms of ischemic placental insufficiency and was planned for urgent Caesarean section. Diagnostic tests performed earlier at 26 weeks of gestation revealed significant levels of lupus anticoagulant and cardiolipin antibodies. Echocardiography showed mitral leaflet thickening, calcification, moderate mitral regurgitation, and a 15 x 8 mm MRHT

attached to the interatrial septum. Therapeutic doses of heparin and aspirin were administered which resulted in clot dissolution at that time. However, a subsequent echocardiography at the time of presentation revealed a fresh 23 x 11 mm thrombus at the same location.

A multidisciplinary team meeting involving a cardiologist, vascular surgeon, and other healthcare professionals was conducted due to the urgency of the situation. The primary concern was the risk of thrombus dislodgment during the perioperative period. Pre-emptive and rescue strategies were devised. The patient received a subcutaneous injection of enoxaparin (40 mg) 12 hours before surgery. Informed consent was obtained for surgery under general anaesthesia.

To minimize risks, arterial and central venous lines were established before anaesthesia induction. The central venous line was carefully inserted through the left internal jugular vein to avoid contact with the MRHT. In case of symptomatic thrombus migration and pulmonary embolism, the management plan included thrombolysis with recombinant tissue plasminogen activator (rtPA). Cardiology and cardiovascular teams were available for any possible intervention. Blood products were prepared for possible surgical site bleeding after rtPA administration, and hysterectomy was considered if necessary. The internal iliac arteries were marked by placing untied sutures over it for prompt intervention if needed. The surgery and anaesthesia were successful, resulting in the delivery of a healthy baby. On the third postoperative day, a thrombus was detected at the same location, but the patient requested discharge from the hospital. She was advised to continue treatment with low-molecular-weight heparin (LMWH) and scheduled for follow-up in the outpatient department.

DISCUSSION

APS is a complex systemic disease characterized by immune-mediated injuries and various clinical manifestations. It can be classified as primary APS or secondary APS depending on the absence or presence of underlying connective tissue disorder, respectively. Antiphospholipid antibodies' pro-inflammatory and procoagulant activity on vascular endothelial cells may contribute to valvular heart lesions and atherosclerosis. Mitral valve involvement, including valvular thickening and vegetations (Libman-Sacks endocarditis), is the most common cardiac manifestation. Intra-cardiac thrombi, although rare, can be life-threatening.

Diagnosing venous thromboembolism (VTE) during pregnancy can be challenging as pregnancy-related symptoms like leg swelling and shortness of breath can mimic VTE symptoms. [(4)] D-dimer levels, traditionally used for diagnosis, are unreliable in pregnancy due to physiological changes such as increased thrombin activity and fibrinolysis [(5)]. Venous duplex ultrasonography is the standard diagnostic tool for symptomatic pregnant women with deep venous thrombosis (DVT). However, unlike general population, where 80% of DVTs occur in the calf, most of the pregnancy related DVTs have been reported to affect the iliofemoral veins (62%), with only 6% occurring in the calf veins [(6)]. Since deep vein thrombosis (DVT) is left-sided in >85% of cases due to compression of iliac vein by gravid uterus, differential calf circumference >2 cm in the second or third trimester can raise suspicion of DVT [(7)]. Anticoagulants, particularly unfractionated heparin (UFH) or low molecular weight heparin (LMWH) combined with low-dose aspirin (LDA), are the standard of care for managing VTE in pregnancy [(8)] .

Managing rare cases like APS complicated by thrombotic events and cardiac manifestations during pregnancy presents significant challenges. Standardized protocols and guidelines are lacking, necessitating careful decision-making and multidisciplinary collaboration. Anaesthesia choice is crucial, with general anaesthesia being preferred in unstable patients. Optimal

preoperative treatment for thrombus management in emergency surgeries remains debated. Heparin infusion is time consuming and may be unsuitable in unstable patients. Surgical embolectomy is costly and is associated with mortality rates of 20-50% [(9)]. Percutaneous procedures carry risks of radiation exposure, damage to the puncture site, perforation of cardiac structures, tamponade, and contrast reactions [(10)]. Therefore, the planned line of management for our case included close observation and preparation for possible complications and emergent management of complications. In this case, transthoracic echocardiography (TTE) was preferred over transoesophageal echocardiography (TEE) for intraoperative cardiac monitoring as TEE insertion may require sedation and can have potential risks of vomiting, aspiration, and sudden changes in intra-abdominal pressures. Further, Preventive measures like hydration, avoiding tachyarrhythmias, avoiding DVT compression pumps and careful central venous line insertion can possibly help in thrombus dislodgment during the perioperative period.

To conclude, management of rare cases of APS with MRHT may require careful consideration of anaesthesia options, preoperative treatment strategies, prevention of thrombus dislodgment, intraoperative monitoring, and coordinated multidisciplinary planning. Further research, collaboration, and the development of standardized protocols and guidelines are necessary to improve the management of similar cases in the future.

Declaration by Authors

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