Anaesthetic implications of a parturient with antiphospholipid antibody syndrome

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Introduction

Antiphospholipid antibody syndrome (APS) is an acquired autoimmune disorder characterised by venous and/or arterial thromboses. When present in women of reproductive age, it is associated with recurrent loss of pregnancy. Antiphospholipid antibodies are directed against various phospholipids in the body, and include anticardiolipin antibodies and the antibodies responsible for the lupus anticoagulant.[1] The prevalence of anticardiolipin antibodies has been reported to be between 2.7 and 7% in the general obstetric population.[2–4] For many years, an association between circulating maternal antiphospholipid antibodies and recurrent pregnancy loss has been acknowledged.[2–4] Pregnancy loss is thought to be caused by thrombosis of placental vessels. Various interventions have been recommended to assist in the maintenance of the pregnancy until delivery of a live infant. The mainstay of treatment has included low-dose aspirin, either alone or combined with unfractionated heparin (UH) or low-molecular-weight heparin (LMWH).[5] However, this anticoagulation predisposes the patient to haemorrhage, and may be a contraindication to regional anaesthesia. Here, we highlight a case of a parturient with APS and discuss the anaesthetic implications.

Case report

A 31-year-old G_2P_1 woman, known to have APS, was admitted to hospital with a twin pregnancy at 34 week gestation, for elective Caesarean section. The patient had a poor obstetric history: in the previous year, she had had a stillborn baby after eight months gestation. Further investigations at that time confirmed the diagnosis of APS. She was taking 75 mg aspirin daily, as well as 40 mg enoxaparin twice daily.

A careful preanaesthetic assessment of the patient was carried out. Her vital signs were within normal limits. Blood tests revealed a haemoglobin of 12.5 g/dL, platelets 79 000/μL, activated partial thromboplastin time (aPTT) 118.5 seconds (control value -14 seconds), and INR 1.2. Results of liver and renal function tests were within normal limits. She tested positive for lupus anticoagulant, antiphospholipid antibody, antinuclear antibody and anticardiolipin antibodies (both IgM and IgG). The patient's aspirin was stopped on admission to hospital, seven days prior to surgery. Written informed consent was obtained for anaesthesia. The patient received antacid prophylaxis prior to arriving at the operating theatre. Her most recent heparin dose was administered 12 hours earlier. On arrival in the theatre, a large-bore intravenous cannula was placed and routine monitors (ECG, pulse oximeter and NIBP) were attached. Her vital parameters were PR 90/min, BP 110/70 mmHg and RR 20/min. It was decided to administer general anaesthesia due to her low platelet count, deranged aPTT, and twin pregnancy, which increases the incidence of postpartum haemorrhage. General anaesthesia was induced with thiopentone. The trachea was intubated with a cuffed endotracheal tube of internal diameter 7.5 mm. Anaesthesia was achieved with sodium thiopentone (5 $mg.kg^{-1}$) and succinylcholine (1.5 $mg.kg^{-1}$) after preoxygenating for three minutes, and it was maintained with

O_2 50%, N_2O 50% and sevoflurane 1-2%. Rocuronium 0.6 mg/kg was administered when the effects of the succinylcholine wore off. A live female infant, weighting 2.25 kg, and a live male infant, weighing 2.20 kg, were delivered 10 and 12 minutes after the skin incision. Both the infants had an APGAR scores of 8 and 9 at one and five minutes, respectively. Fentanyl 2 µg/kg was administered after delivery of the second infant.

Oxytocin infusion was started at a rate of 20 IU per hour after delivery of the placenta. But the uterus was atonic and bleeding profusely. The patient was given 0.2 mg methylergometrine by slow intravenously followed by 250 µg carboprost tromethamine injected intramuscularly, and 500 mL of a 6% solution of hydroxyethyl starch was infused. Haemostasis was not achieved, the uterus was not well contracted, and bleeding continued. Finally, a decision was made by the obstetrician to carry out a bilateral uterine artery ligation, and a B-Lynch suture was applied. This was followed by transfusion with 2 U of platelets, 2 U of fresh frozen plasma and 1 U of fresh whole blood. At time of closure, the uterus was contracted and there was no active bleeding. The estimated blood loss was 2 000 mL.

Neuromuscular blockade was reversed with 2.5 mg neostigmine and 0.4 mg glycopyrrolate. The total duration of surgery was two hours. The intraoperative urine output was 200 mL. After tracheal extubation, the patient was transferred to the intensive care unit for observation. The postoperative course remained uneventful and the patient was discharged eight days after delivery.

Discussion

APS is one of the most common acquired hypercoagulable states. APS can occur alone (primary), or in patients who fulfil the criteria for systemic lupus erythematosus (secondary).[6,7] The diagnosis of APS is based upon the presence of one clinical and one laboratory criterion. Clinical criteria include venous or arterial thrombosis, and foetal loss. Laboratory criteria are the detection of positive antiphospholipid antibodies, lupus anticoagulant and anticardiolipin antibodies (IgG and IgM) on two occasions, at least six weeks apart. An autoimmune thrombocytopenia (platelet count < 150 x 1.09/L) may also be present.[8]

An increased tendency for both venous and arterial thrombosis is seen in patients with APS.[1] Thrombosis of the placental microvasculature increases the risk of early and late miscarriage, pre-eclampsia and placental abruption. Intrauterine growth retardation may lead to foetal distress and patients may present with preterm delivery.[9] They may also present with a host of venous thromboembolism (VTE) risk factors and, hence, patients with APS are often considered candidates for antepartum anticoagulation with low-dose aspirin, either alone or combined with UH or LMWH.[5]

Parturients with APS require special consideration for perioperative management as a consequence of the disease and anticoagulation therapy. Whether to proceed with a neuraxial technique in such patients is a challenging decision to make. The risk of thrombosis, when the preoperative patient is not effectively anticoagulated, must be weighed against the risk of bleeding during and after surgery, if anticoagulation is continued perioperatively. Use of LMWH is preferable to UH given its limited need for testing, reduced thrombocytopenia and bone demineralisation risk, inability to cross the placenta, and the reported improvement in live birth rates.[10,11]

We proceeded with general anaesthesia because our patient had a prolonged aPTT, thrombocytopenia and twin pregnancy. Twin pregnancy itself is associated with an increased incidence of postpartum haemorrhage.[12] The use of regional anaesthesia in conjunction with LMWH is controversial. Though it is recommended that, after the last administration of LMWH at thromboprophylaxis dose, at least 10–12 hours should lapse before needle placement, there have nonetheless been reports of spinal haematoma associated with a higher dose regimen of LMWH for prophylaxis.[13,14] Since our patient was receiving 40 mg of enoxaparin twice daily, which is at a higher level, with the last dose being given 12 hours prior, we decided against regional anaesthesia. Furthermore, the patient had a prolonged aPTT of 118.5 seconds (normal: 20–30 seconds; therapeutic: 1.5–2.5 x normal aPTT).[15] Sometimes, antiphospholipid reacts with the serum protein β_2 glycoprotein 1 and the phospholipid complex that is normally responsible for inhibiting factor XII activation/platelet activation, and this may lead to an increase in aPTT. But, rarely, there may be antibodies to the clotting factors II, VII, VIII and IX, which can also prolong the aPTT tests.[16] Therefore, the exact cause of increased aPTT must be determined and managed accordingly. In our case, however, the actual cause of prolonged aPTT could not be ascertained and, hence, we proceeded with general anaesthesia. The patient's platelet count was 79 000/µL, which is on the low side. The decision to proceed with regional anaesthesia or not depends upon the clinical assessment of the anaesthesiologist. Thrombocytopenia was also one of the factors holding us back from performing

neuraxial blockade. Twin pregnancy itself can have obstetric complications, like pre-eclampsia, intrauterine growth restriction and postpartum haemorrhage.[12]

Conclusion

This report focused on the anaesthetic implications that arise in parturients with APS, as a consequence of the disease and anticoagulation management. There are some case series that described the successful application of neuraxial techniques without neurological sequelae in patients with APS and prolonged baseline aPTT.[17,18] However, given the small numbers of patients in these series and the rare occurrence of spinal and epidural haematomas, results of these studies do not prove that neuraxial techniques are safe in this setting. The perioperative management of parturients receiving long-term anticoagulation requires special consideration of the risks of bleeding and thrombosis.

To conclude, patients with hypercoagulable states like APS with significant risk factors for VTE should be given adequate antithrombotic prophylaxis, which should be continued perioperatively, and the choice of anaesthesia varies according to the presenting scenario.

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