Anaesthetic management of parturient with malaria and thrombocytopaenia

INTRODUCTION

Malarial infection during pregnancy is a significant public health problem with substantial risk for the pregnant woman and newborn child. Globally, 125 million women are at risk every year. In Sub-Saharan Africa, 23 million pregnant women are exposed to malarial infection annually and approximately 400,000 pregnant women develop moderate to severe anaemia.[1] We report successful perioperative management of case of *Plasmodium vivax* infection in full-term parturient who presented with thrombocytopaenia and deep transverse arrest and subsequently developed right occipito-parietal haematoma with mass effect.

CASE REPORT

A 24-year-old unconscious, full-term parturient in the second stage of labour with deep transverse arrest was referred for further management. History revealed that she was suffering from fever for last 3 days and had become unconscious 2 days back. There was no history suggestive of bleeding diathesis or drug ingestion. She had been admitted to private hospital for induction of labour but detailed records were not available.

On examination, the patient was unconscious with Glasgow Coma score of eight. She was febrile, severely pale, had mild icterus; petechial haemorrhages were seen on thighs and arms. The heart rate was 114/min and blood pressure within normal limits. Uterus was term size with moderate contractions. Cervix was fully dilated and effaced, with cephalic presentation and pelvis was of adequate size with caput and moulding. Laboratory investigations reported haemoglobin 6.8 g/dl, total leucocyte count 6300/mm^3 and platelet

count 6000/mm^3 with normal prothrombin time and activated partial thromboplastin time.

She was resuscitated with 1 L of normal saline and colloids, 3-unit of platelet rich plasma (PRP) and 1-unit of packed red cells. Empirical antibiotics, antimalarials and antipyretics were started. Informed high-risk consent was taken and after aspiration prophylaxis, obstetrician decided to attempt assisted vaginal delivery. Standard monitoring was applied and oxygen was administered by venturimask.

Under monitored anaesthesia care (MAC), an assisted vaginal delivery with vacuum extraction followed by outlet forceps application was conducted and a live male baby weighing 3.2 kg was delivered. After delivery, intravenous methylergonovine maleate 0.2 mg and slow infusion of oxytocin 5 IU were administered. Vital parameters remained within normal limits except for persistent tachycardia. After delivery, the patient was shifted to Intensive Care Unit (ICU). The total perioperative fluids administered included 4-unit of PRP, 1-unit of apheresis platelets, 2-unit of packed red cells and 1 L of crystalloids over 2 h.

Neonatal data recorded an Apgar score of 6 and 8 at 1 and 5 min, respectively. In view of poor respiratory efforts, grunting and metabolic acidosis, neonate was put on ventilatory support and shifted to neonatal ICU. His condition improved gradually and was weaned from the ventilator after 6 days.

In intensive care, under continuous monitoring patient was oxygenated and hydrated. Samples were sent for complete blood count, coagulation profile, malarial and dengue serology, HIV and G6PD levels. After 4 h, in view of poor neurological status and acidosis, patient was put on ventilatory support. Computed tomography of the head showed occipito-parietal haematoma with a mass effect [Figure 1] necessitating an emergency decompressive craniotomy under general anaesthesia.

Anaesthesia was induced with thiopentone sodium 100 mg and vecuronium bromide 6 mg. Anaesthesia was maintained with O_2:N_2O: sevoflurane and top-up doses of atracurium. Surgery lasted for 5 h and throughout patient vitals were stable. Blood loss was managed with 2-unit of packed red blood cells and 2-unit of PRP. Post-operatively, she was shifted to ICU for elective ventilation.

Peripheral blood smear revealed numerous gametocytes of *P. vivax* in a background of severe thrombocytopenia. Malarial serology was reported positive for *P. vivax*. Bilirubin levels were normal. Dengue serology and Elisa for HIV were negative. G6PD levels were normal and disseminated intravascular coagulation was ruled out by normal level of fibrin degraded products.

Supportive therapy included antibiotic and antimalarial drugs. On 3rd post-operative day, patient regained consciousness and was extubated. Parasitaemia declined on the 3rd day and became negative on the 5th day. Platelet count improved to 2.12 lakhs/mm^3 and haemoglobin increased to 10.5 g/dl. She was shifted to the ward on 6th day and was discharged in stable condition after 19 days.

DISCUSSION

P. vivax infection in pregnancy is associated with significant risk of adverse maternal and foetal outcome. Recent evidence showing *P. vivax* infected RBCs adhering to lung endothelial cells and to the placental tissue indicates that, in vivax malaria, mechanisms similar to those associated with falciparum malaria severity may be involved.[2]

Severe malaria in pregnancy is a medical emergency and should be treated in high-dependency unit. Complications such as hypoglycaemia, pulmonary oedema, severe anaemia and secondary bacterial infection are more common in pregnant women.[3] Acute malaria can cause thrombocytopaenia[4] and in severe cases may lead to disseminated intravascular coagulation. Pre-operative assessment should be directed towards severity and choice of anaesthetic technique largely depends on proposed method of

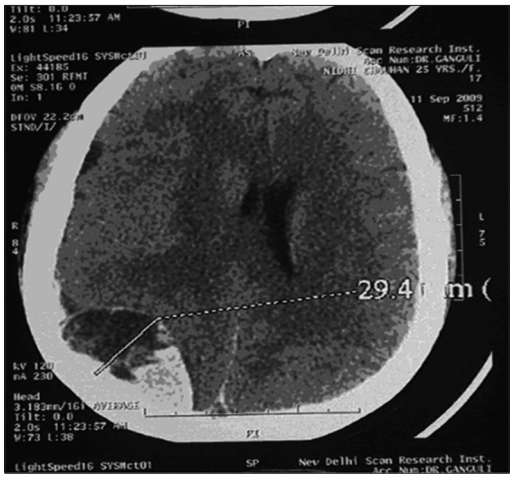

Figure 1: Noncontrast computed tomography head showing occipito-parietal haematoma with a mass effect

delivery, gestational age, coagulation status, obstetric complications and other significant medical history.

Our plan for assisted delivery under MAC was influenced by presence of thrombocytopaenia, altered mental status and suspected raised intracranial pressure. Increased intracranial pressure is largely the result of cerebral oedema caused by vasocapillary obstruction with parasitised red cells.[5]

Decreasing platelet count is contraindication to neuraxial blockade. Concerns of introducing malarial parasites into the cerebrospinal fluid, with regional anaesthesia also exist.[6] General anaesthesia may be indicated in situations of severe anaemia and thrombocytopaenia, foetal compromise and haemodynamic perturbation in the mother.[7] One should be aware of drug interactions between the antimalarial drugs and drugs used for anaesthesia. Quinine enhances the effect of neuromuscular blocking agents and opposes action of neostigmine. Thiopentone and propofol can be used as induction agents but ketamine is discouraged because it causes an increase in cerebral blood flow and intracranial pressure.

CONCLUSION

High degree of clinical suspicion, timely diagnosis and multispeciality approach of management must be practised in unconscious parturient. Thrombocytopaenia may not be the cause of mortality by itself, but it can be a marker of increased severity and need for aggressive management. It is prudent for the anaesthesiologists to understand the implication of disease and their role for favourable outcome.

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Conflicts of interest
There are no conflicts of interest.

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