



ANAESTHETIC MANAGEMENT OF A PRETERM NEWBORN WITH SACROCOCCYGEAL TERATOMA

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ABSTRACT A 9 days old preterm girl with sacrococcygeal teratoma was posted for excision. Pre anaesthetic planning included assessment of general condition of the patient, presence of any other congenital anomalies and any coagulopathy. Intravenous access was sited and blood product availability was ensured as major blood loss is anticipated intraoperatively. To make intubation convenient, tumour was placed on a doughnut shaped support. Measures were taken to avoid intraoperative hypothermia, blood loss was managed with packed red blood cells transfusion. Postoperatively patient was monitored in the neonatal intensive care unit and was uneventful. This report highlights the difficulties such as prematurity, difficult airway, difficult intravenous access, hypothermia, blood loss and prone position during excision of a large tumour in a preterm.

KEYWORDS : benign teratoma ; hypothermia ;preterm birth; anaesthesia

Introduction

Sacrococcygeal teratoma (SCT) is a rare tumour that arises from the base of the coccyx. It is most common in girls (female: male ratio - 3:1 to 4:1). [1] SCT, which is usually benign, is found in neonates, infants, and children below 4 years old. About 18% of these infants have additional congenital anomalies. Surgical resection remains primary management to save life. [2]

Case Report

A 9 days old female baby born to a 26 year old mother at 30 weeks of gestation by emergency lower segment cesarean section. Birth weight was 1540 grams with antenatally diagnosed sacrococcygeal teratoma. As the child did not cry soon after birth, she was resuscitated and mechanically ventilated for 2 days. On the 4th day she developed neonatal shock, managed with inotropes and mechanical ventilation for 3 days. After that extubated to CPAP on 2nd day and CPAP continued for 2 days at the neonatal intensive care unit (NICU).

On postnatal day 9 baby was posted for excision of sacrococcygeal teratoma. On physical examination, baby was alert, active and moving all four limbs. Vitals were stable. There were no signs of increased work of breathing. A swelling of size 16*14*5cm with an irregular surface and variable consistency was present over the sacrococcygeal region (Fig. 1). All laboratory investigations were normal. Echo report showed ostium secundum Atrial Septal Defect, PDA and good ventricular contractility. Ultrasonogram of abdomen and pelvis showed left sided solid cystic lesion in sacrococcygeal region with minimal pelvis extension. Blood and blood products were arranged.

Operating room was heated to 27 degree Celsius and a paediatric heating blanket was kept ready. All other standard anaesthesia techniques were followed. The giant sacrococcygeal tumour was placed on an adequate size doughnut shaped support made of cotton, with rest of the body over a pillow. Saturation probe, ECG and temperature probe were attached. Preoxygenated with 100% Oxygen. Premedicated with injection atropine 0.06 milligram and injection fentanyl 1.5 microgram via umbilical vein catheter. After inhalational induction with sevoflurane and Oxygen, trachea intubated with uncuffed endotracheal tube of internal diameter 3mm. Anaesthesia was maintained with sevoflurane 2-2.5%, oxygen, nitrous oxide (40:60) and Inj. Atracurium for muscle relaxation. Peripheral vein cannulation done on right forearm with 24 G cannula ringer lactate infusion started according to 4-2-1 rule. Patient was positioned prone. All pressure points padded and abdomen kept free. Exposed area outside the surgical field was draped with warm cotton sheets. Intraoperatively blood loss was replaced with packed red blood cells (10ml/kg). Patient was haemodynamically stable throughout the surgery.



Figure 1: patient positioned in prone position after intubation

After completion of surgery which lasted for 2.5 hours, patient was positioned supine and gentle oropharyngeal suction was given. After return of spontaneous respiration and cough reflex patient was reversed with Inj. Neostigmine 0.05 mg/kg and Inj. Atropine 0.01mg/kg and extubated. Post operative analgesia was given with Inj. Paracetamol 5 mg/kg i.v 6th hourly. Postoperatively patient was monitored in the NICU and it was uneventful.

Discussion

The teratomas are embryonal tumours that arise from all the three germinal layers (ectoderm, endoderm, and mesoderm). [3] It may occur in sites such as the sacrococcygeal region, head and neck, oropharynx, pericardium, mediastinum and retroperitoneum. Antenatal diagnosis is very crucial to prevent foetal and neonatal death. Imaging technology using ultrasound and CT Scan allows the prenatal and postnatal diagnosis of SCT. [4]

The multiorgan involvement makes the anaesthetic management challenging. Hydrocephalous, spina bifida, cleft lip and cleft palate, polydactyly, transposition of great vessels, neurogenic bladder, hypospadias, epispadias and ectopic kidney are some of the associated anomalies. [5] Presence of any coagulopathy, high output cardiac failure, renal obstruction by the mass, any neurological deficit and renal obstruction by the mass should be assessed preoperatively. There are chances for major blood loss and hypovolemic shock in these patients due to the presence of large pelvic venous bed, intratumour arteriovenous fistula and associated coagulopathy. This may be followed by complications due to massive transfusion such as disseminated intravascular coagulation, dilutional coagulopathy and thrombocytopenia.

Long duration of surgery demands close attention to fluid balance and temperature regulation. Hypothermia was prevented in our case by raising the operating room temperature, use of warm bed, warm blankets, warm i.v fluids and humidified inspired gas.

Prone position is associated with complications such as injury to the

peripheral nervous system, venous and arterial occlusion at various sites, pressure necrosis of skin, ophthalmic injury, changes in respiratory and cardiovascular physiology. [6] These complications can be minimised by adequate padding and keeping abdomen free from any compression. Ventilatory parameters has to be closely monitored throughout the surgery.

Another alarming complication is tumour lysis, which can lead to cardiac arrest due to extreme hyperkalaemia. [7]

Conclusion

Excision of large and highly vascular tumour in a preterm newborn is a challenge to anaesthetists. Main anaesthetic concerns are prematurity, difficult intravenous access, difficult airway, prone positioning, massive blood loss, hypothermia, cardiovascular instability, associated congenital anomalies and delayed postoperative recovery. Meticulous planning and vigilant monitoring during intraoperative and postoperative period are key for favourable outcome in patients with sacrococcygeal teratoma.

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