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Case Report

Anaesthetic Management of Sacrococcygeal Teratoma Excision in A Neonate: Case Report of Two Cases

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Abstract

Sacrococcygeal teratoma (SCT) is one of the common perinatal germ cell tumours with an incidence of 1 in 30,000 - 40,000 live births. Most are benign and prognosis tends to be good after resection. Here we report the successful management of two cases of teratoma excision under general anaesthesia. Our objectives were to prevent the haemodynamic swings, blood loss and hypothermia during intraoperative period. Early extubation and careful postoperative care led to an uneventful outcome.

Keywords: *Sacrococcygeal Teratoma; General Anaesthesia; Complications*

Introduction

Sacrococcygeal teratoma is the commonest perinatal germ cell tumour which is located at base of coccyx, with an incidence of 1 in 30,000-40,000 live birth and female preponderance ratio {M:F 1:3} [1]. The origin is from primordial pluripotent cells and are composed of two or three germ cells layers [2]. The tumor usually has both cystic and solid parts. A fetus with SCT have important implication in the perinatal period with risk of high cardiac output failure, placentomegaly, hydrops and subsequent fetal demise secondary to increased metabolic demands [3,4]. Prenatal detection with three -dimensional (3D) sonography can occur even in the first trimester [5]. Surgical resection remains the mainstay of treatment and usually performed immediately after birth [6]. These teratoma has hypervascularity derived from the middle sacral artery therefore resection of these tumors is a high risk procedure and mandates careful anaesthetic management. Here we present a detailed and uneventful perioperative management of two cases for SCT excision.

Case Report-I

A 4 day old 2.2 kg female baby, which was vaginally delivered at full term presented to paediatric surgery OPD with single huge mass at coccygeal region, which was extending on both buttocks. On examination, the mass was completely extra-abdominal expect for a little part which was attached to the coccyx and solid and cystic in nature with size of 12 cm x 15 cm.

Patient was electively posted for excision of the tumour. Preoperatively all investigations like CBC, serum creatinine, blood sugar, bilirubin, SGOT, SGPT, PT/INR, Serum Electrolyte and 2D ECHO were with in normal limits.

Baby was kept nil by mouth for four hours prior to surgery and she received maintenance fluid 10 ml/hr. On arrival in OT, monitor like NIBP, ECG, SPO_2 were attached and premedication with inj. ondansetron 0.15 mg/kg, inj. glycopyrrolate 5 µg/kg and inj fentanyl 2µg/kg was given. Patient was induced with sevoflurane along with muscle relaxant inj. Atracurium 0.5 mg/kg and intubated with 3.5 mm

uncuffed endotracheal tube and maintenance was done with O_2, sevoflurane and inj atracurium 0.1 mg/kg. Intravenous paracetamol 15 mg/kg and dexamethasone 0.15 mg/kg was given intraoperatively. Caudal block could not be given due to the mass in the sacral region. Surgery was performed in prone position and monitoring of HR, BP, SPO2, $ETCO_2$ and urine output was done intraoperatively. Patient was kept warm by wrapping head and limbs in cotton rolls, increase ambient temperature of OT, use of radiant warmer. Surgical resection of tumour including coccygectomy was done which was completed in 5 hours. Intraoperatively 150 ml of Isolyte-P was administered and the total urine output was 30 ml. After completion of surgery spontaneous respiration was adequate so the patient was reversed with inj. neostigmine 0.05 mg/kg and inj glycopyrrolate 10 µg/kg and was extubated after regaining adequate muscle tone, cough and gag reflex. Patient was shifted to NICU for further management where 50 ml PRBC was transfused. Postoperative recovery was uneventful and discharge after 20 days.

Case Report II

A 4 day old and 1.4 kg female baby was born prematurely by caesarean section presented to paediatric surgery OPD with a single huge mass 5 × 5 cm on coccygeal region. The mass was solid to cystic in nature and no other congenital anomaly was present. Patient was electively posted for excision of tumour. Her blood investigations and 2D ECHO were within normal limit. Baby was kept nil by mouth for four hours prior to surgery and she received maintenance fluid 6 ml/hr. On arrival in OT, monitor like NIBP, ECG, SPO2 were attached and premedication was given with inj ondansetron 0.15 mg/kg, inj glycopyrrolate 5 µg/kg and fentanyl 2 µg/kg. Patient was induced with sevoflurane and intubated with 2.5 mm uncuffed ETT. Intraoperatively anaesthesia was maintained with oxygen, sevoflurane and inj atracurium 0.5 mg/kg loading and 0.1 mg /kg for maintenance dose. Total surgery duration was 3 hours and total 50 ml fluid was given. Patient was not extubated in view of prematurity and shifted to NICU for further management. The postoperative recovery was uneventful and patient was discharged after 10 days.

Discussion

SCT are classified morphologically by ALTMAN into 4 different varieties according to degree of exterior compartment or intrapelvic extension which are type 1- predominantly lies external to fetus, type 2- present externally but have significant intrapelvic extension, type 3-they are apparent externally but predominantly lie within the pelvis and abdomen, type 4-they are entirely presacral with no external presentation [2]. The neonate in our first case was diagnosed with altman type 2 SCT which has both external and internal components and second case was diagnosed with type 1 SCT. The multiorgan involvement makes the anaesthetic management challenging. SCT could be diagnosed from IInd trimester of pregnancy due to polyhydramnios or uterus larger than the gestational age. SCT is associated with prematurity, LBW, low APGAR scores, placentomegaly, nonimmune hydrops, hydrocephalus, spina bifida, hypospadias and ectopic kidney [7].

Monitoring for fetal distress during pregnancy is very important as such large tumours have extensive rich blood supply. This blood flow causes a shift in blood flow away from the baby towards the tumour, which can cause baby to become sick and hydropic. Progressive hydrops can be associated with swollen and sick placenta that can also result in mirror syndrome where the mother mirrors the baby sickness and this is due to fluid retention in fetal compartment and mother [8].

Anaesthetic challenges are mainly due to prematurity, blood loss, prone position, hypothermia and associated anomaly. Early diagnosis should be made and caesarean delivery should be preferred over normal vaginal delivery to avoid tumour rupture, in our second case baby was delivered by caesarean section but in first case baby was delivered vaginally outside from our hospital [9].

Meticulous dissection in avascular plane between the tumour and the normal tissue should be done to avoid excessive blood loss and hypovolemic shock. DIC, dilutional coagulopathy, thrombocytopenia can occur in state of massive blood transfusion. Hypothermia is common due to exposure of large surface area of tumour, and it may worsen coagulopathy hence patient should be wrapped completely by cotton rolls, the ambient temperature of OT should be maintained to 27^0C, use radiant warmer and warmed fluids should be administered.

Surgical injuries include disruption of nerves and muscles of pelvic and perineal region which leads to bowel and bladder dysfunction. Tumour lysis can lead to cardiac arrest due to hyperkalemia and hypocalcemia by increasing the plasma concentration of anion that chelate free calcium which can manifest clinically as hypotension, cardiac failure and arrhythmias [10]. Alpha fetoprotein is a valuable marker of teratoma to differentiating between mature and malignant teratoma [11].

Conclusion

SCT resection is associated with complications like massive haemorrhage, coagulopathy, hypothermia, electrolyte imbalance. Timely management of these complications, early extubation and postoperative nursing care results in successful outcome.

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