

Anaesthetic Management of Paediatric Case Posted for Mesenteric Cyst Excision: A Case Report

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Abstract

Mesenteric cysts are a rare entity in paediatric population with prevalence of 1:100000 in adults and 1:20000 in children. Usually they are benign intra-abdominal tumours with an unknown aetiology. Many theories have been reported for the origin of such cysts such as hydatid, Meckel's diverticulum and mesenteric lymphatic's. Some consider that all cysts are of embryonic origin and initiated with obstruction of existing lymphatic channels or by growth of congenitally misplaced lymphatic tissue which does not communicate with the vascular system. Due to lack of specific symptoms, correct pre-operative diagnosis is difficult. Complete surgical excision is the treatment of choice. This can be accomplished by laparotomy or by minimally invasive surgery. Here, we report a 2 day old male child presenting with mesenteric cyst posted for cyst excision managed under epidural with general anaesthesia.

Keywords: Mesenteric cyst; General Anaesthesia; Epidural Analgesia

Abbreviations: HR: Heart Rate; ECG: Electrocardiography; NIBP: Non-Invasive Blood Pressure; SPO₂: Oxygen Saturation; EtCO₂: End Tidal Carbon Dioxide; LOR: Loss of Resistance.

Introduction

Mesenteric cysts are rare benign intra-abdominal tumours with prevalence of 1:20,000 in children. These lesions can present with symptoms such as abdominal pain, nausea, vomiting, anorexia, and a change in bowel habits, however, most commonly they are asymptomatic, and detected incidentally via physical examination, or imaging. Although most mesenteric cysts are benign, these lesions do occasionally cause complications, including intestinal obstruction, volvulus, torsion, or even haemorrhagic shock secondary to bleeding or rupture. The aetiology of such cysts remains unknown but several theories regarding their development exist. Complete surgical excision of the cyst is the treatment of choice [1].

Due to the rarity of this entity and the lack of specific symptoms, correct pre-operative diagnosis is difficult. Knowledge of these lesions is important due to the various complications associated with suboptimal surgical management.

Case Presentation

A 2 days old male neonate with mesenteric cyst measuring 8x5cm was posted for mesenteric cyst excision. Neonate was preterm (36 weeks) delivered by normal vaginal delivery with birth weight of 3kgs, cried immediately after birth presented with abdominal distension since birth and was kept nil by mouth for the same. No significant family or surgical history was present on physical examination general condition was moderate with adequate nourishment. Baby was alert. Airway assessment showed edentulous paediatric airway. On respiratory system examination, chest movements were bilaterally equal and on auscultation air

entry was equal on the both side with room air saturation of 98%. On cardiovascular examination S1 and S2 heard with no murmur. Hematologic evaluation showed Hb-18.3gm/dl, TLC-11,800 and Platelet count- 1, 67,000, RBS-124mg/dl, serum electrolytes were within normal limits. Ultrasound abdomen and pelvis showed large cystic lesion measuring 8x5cm seen in abdomen, displacing bowel loops laterally with no evidence of bowel obstruction. The findings confirmed on MRI (Figure 1). Parents were explained about the mode of anaesthesia, need for post-operative intensive care, Informed, written valid consent was taken from the parents.

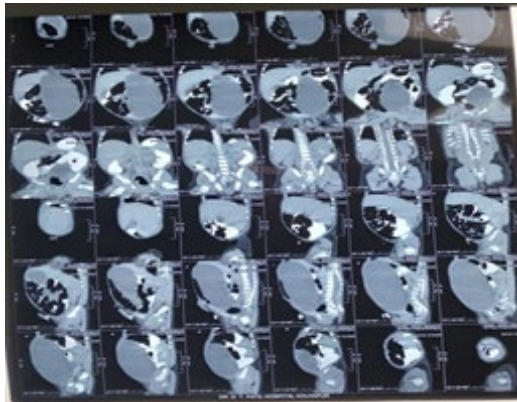


Figure 1: CT abdomen findings of mesenteric cyst.

Anaesthetic Management

Preoperative optimisation was done. In the pre-operative room IV access of patient was checked. Baby was shifted to operation theatre and multi parameter monitors were attached. Monitoring started with heart rate (HR), electrocardiography (ECG), non-invasive blood pressure (NIBP), oxygen saturation (SPO₂), end tidal carbon dioxide (EtCO₂). Premedication and antibiotic was given as per institutional protocol. Infusion with Isolyte-P was started@ 15ml/kg/hr.

Pre oxygenated with 100% FiO₂ for 5mins and induced with Inj. propofol 1ml/kg and Inj. Succinylcholine 1.5mg/kg intravenously (IV). Intubation with uncuffed endotracheal tube No. 2.5 was performed with direct laryngoscopy using miller blade no.1 Bilateral air entry checked by auscultation. Tube was fixed and throat pack was placed. (Figure 2) Intraoperatively anaesthesia was maintained on oxygen (1L/min), nitrous oxide (1L/min), sevoflurane (1 MAC) and Inj. atracurium bolus 0.5mg/kg later 0.25mg/kg IV intermittently. Baby was manually ventilated throughout the surgery using Jackson and Rees circuit with respiratory rate of 40-50/min.



Figure 2: Induction of GA.

Preparation was taken for regional block (epidural). Under all aseptic precautions, intervertebral space was identified by tracing the spine from upwards. Caudal epidural using 19 G Tuohy's needle by loss of resistance (LOR) technique to air 22 G epidural catheter was introduced and fixed at 8 cms. Inj.0.25% bupivacaine 3cc given after aspiration test and catheter placement confirmed. Betadine dressing done (Figure 3).

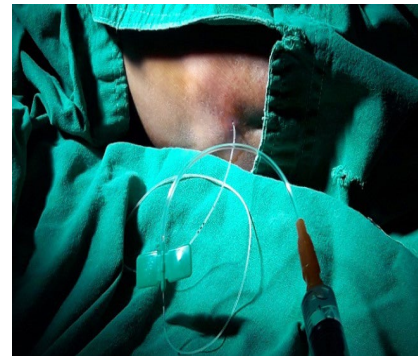


Figure 3: Placement of Caudal epidural catheter.



Figure 4: Intraoperative stable hemodynamics.

Duration of surgery was 90 mins. Intraoperatively 100ml of isolyte-P was given. Baby was haemodynamically stable with HR 120-140 /min, systolic blood pressure of 60-90mmHg, EtCO₂ 35-40/min, SPO₂ 98-100%, urine output 10ml (Figure 4). A large mesenteric cyst was excised surgically (Figure 5). Baby was extubated after surgery and post-operative period was uneventful. Epidural top ups given for postoperative analgesia using 3ml of 0.125% bupivacaine twice daily (Figure 6). Epidural catheter was removed after 72 hrs. The postoperative course was uneventful.



Figure 5: The mesenteric cyst.



Figure 6: Postoperative stable patient with epidural analgesia.

Discussion

Abdominal cystic lymphangiomas are rare tumours with a reported incidence between 1 in 20,000. Almost 90% are detected by the mean age of 2 years, and most occur in the small bowel mesentery. Their suggested mechanism of occurrence is an anomalous development of the lymphatic system, which involves the obstruction of developed lymphatic channels due to lack of communication between small bowel lymphatic tissue and the main lymphatic vessels resulting in blind cystic lymphatic spaces [2]. They can be

classified into 4 types according to their morphology: type 1 or pediculate, which is easily respectable type 2 or sessile (between the 2 layers of the mesentery) requires resection of the affected loops and anastomosis; type 3, which can extend to the retroperitoneum and cannot be completely resected; and type 4, which is multicentre and requires several surgeries and sometimes sclerotherapy.

Symptoms in children vary from abdominal distension, abdominal pain, or a palpable mass to small bowel obstruction or an acute life-threatening intra-abdominal catastrophe such as intestinal volvulus or infarction, ovarian torsion, or peritonitis as a result of rupture of the cyst [3,4].

The differential diagnosis of an intra-abdominal cystic mass involves enteric duplication cysts, enteric cysts, mesothelial cysts, pancreatic pseudocysts, non-pancreatic pseudocysts, cystic mesotheliomas, cystic spindle cell tumours, and cystic teratomasic spaces. Total surgical excision or deroofting, marsupialization and excision is preferred to prevent recurrence [5]. Laparoscopic surgery in recent years has proven to be an effective alternative technique against these lesions. Laparoscopic surgery has been found to be effective in recent years. Resection and anastomosis may be required in 60% of cases [6].

Kalyan, et al. Reported 1 and half month old child with rare type of mesenteric cyst-a chylolymphatic cyst presented with sub-acute intestinal obstruction having multiple fluid levels on ultrasonography and X-ray abdomen and exploratory laparotomy was performed for excision of the cyst where histopathology confirmed the diagnosis [7]. Use of multimodal analgesia with caudal epidural catheter to facilitate postoperative analgesia is currently very popular with the advent of ultrasound [8]. Caudal blocks also maintains intra and postoperative hemodynamic stability and allows early ambulation [9].

Our case was successfully managed under epidural and general anaesthesia with uneventful intraoperative and post-operative period and post-operative analgesia with frequent epidural top ups using 0.125% bupivacaine.

Conclusion

Combined general anaesthesia with caudal epidural is a better choice for maintaining hemodynamic stability and perioperative analgesia in neonates for exploratory laparotomy for excision of mesenteric cyst in neonates.

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