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A CASE REPORT- ANAESTHETIC MANAGEMENT OF A NEONATE WITH CONGENITAL CYSTIC ADENOMATOID MALFORMATION

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ABSTRACT

• CCAM (congenital cystic adenomatoid malformation) is a rare pulmonary developmental hamartomatous defect that involves one or more lobes of the lung and is made up of pulmonary tissue with aberrant bronchial growth. This is a case report of a newborn who underwent surgical excision of CCAM at the age of 20 days. The neonate had CCAM TYPE 1 in the right lower lobe but no cardiac involvement. The surgical procedure called for mild supported manual ventilation until the thorax was opened, then regulated ventilation with judicious fluid management, intra-operative care of hypercarbia and hypoxia, and meticulous post-operative surveillance. With satisfactory respiratory function, surgical excision of the cyst and lobe was successful.

Introduction

• CCAM (congenital cystic adenomatoid malformation) is a lung developmental hamartomatous condition characterised by aberrant bronchial proliferation. Adenomatoid proliferation of bronchioles that forms cysts at the expense of normal alveoli is the most common pathogenic characteristic, which is characterised by hyperinflation and progressive air trapping (1,2) It is frequently unilateral, with varying size and growth, resulting in a variety of clinical presentations ranging from intrauterine foetal death due to hydrops to childhood discovery due to recurrent lung infections. (3). In live births, the incidence ranges from 1 in 70,000 to 1 in 90,000. (4). The successful anaesthetic care of a 20-day-old newborn, as well as the management of intraoperative hypercarbia and hypoxia, are discussed in this case report.

CASE HISTORY AND MANAGEMENT

• We discuss a case of a 20-day-old female kid who arrived at our hospital with reduced saturation and tachypnoea at birth, weighing 3.2 kilograms, and was diagnosed with right lower lobe CCAM type 1 and scheduled for right lower lobe lobectomy.

SPO2 – 86 percent; HR 160bpm; RR 58cpm On the right side of the chest, there are less breath noises. Except for APTT, which was abnormal (42 seconds), all other haematological and biochemical tests were normal. HRCT thorax revealed ASD secundum of 3mm, hyperinflation of right lower lobe with mass effect suggestive of CCAM type 1, and big variable sized multilobulated cystic lesion in right lobe with surrounding consolidation, largest cystic lesion 2.8x1.2cm.

After obtaining consent (picu ,high risk sos ventilator), all monitors (ECG,SPO2,NIBP,ETCO2,Temperature probe) were connected, the pic line and one 24g intravenous catheter were secured, and the patient was premedicated with injection glycopyrolate 0.012 mg and injection fentanyl 6.5 mg. Preoxygenation with 100 percent oxygen for 3 minutes, general anaesthesia with 1.5 percent sevoflurane and propofol, and intubation with 3.5 uncuffed tube utilising local spray 1 Spontaneous breathing was allowed with modest aided ventilation until the chest opened, and then atracurium 0.5 mg/kg injection and intermittent positive pressure ventilation were used to maintain it. Appropriate ventilatory methods, including arterial blood gas sampling and sufficient analgesia, were used to manage intraoperative occurrences. At the conclusion of surgery, an ICD was implanted and the patient was extubated. Because the APTT was abnormal, a caudal epidural was avoided, and a 0.25 percent bupivacaine post-operative intercostal block was administered. Intraoperative hypercarbia was difficult to manage. For a favourable outcome, anaesthetic challenges were essential in the management of CCAM, as

was the necessity for suitable ventilatory methods, as spontaneous breathing may not be adequate and CPAP can increase hyperinflation.

VENTILATION STRATEGY AND MANAGEMENT

Gentle assisted manual ventilation was used until the thorax opened, then control ventilation was used. PPV was started, and PRVC mode was maintained after the cyst was removed with PIP approximately 20cms of H20. Intraoperatively, mild hypoxia and elevated ETCO2 were addressed. At the conclusion of operation, the patient was extubated and a right sided ICD was implanted with an under water seal.

• Diaphragmatic hernia, pulmonary sequestration, bronchogenic cysts, and congenital lobar emphysema are among the possible diagnoses (5). The neonate's respiratory distress is the most common symptom. Surgical excision is the only way to get rid of CCAM for good. Even small cysts that do not obstruct mediastinum or heart functions can raise the risk of lung infections and cancer in the long run.

• In this case, our objectives were to provide gentle ventilation, positive pressure ventilation, avoid nitrous oxide, employ PRVC mode, provide enough analgesia for spontaneous breathing, and provide intercoastal block. If IPPV is required, moderate ventilation or pressure control ventilation with a pressure restriction of 20cm of H20 should be performed until thoracotomy is performed. Although enough analgesia can be achieved with a caudal epidural, in our situation, the APTT was abnormal (42 seconds), therefore an epidural was not used and an intercostal block was used instead. Anaesthetic management is complicated by VQ mismatch, compression atelectasis, mediastinal shift, and hypercarbia control. Overinflation caused by PPV causes mediastinal displacement and hemodynamic impairment. Extubation is preferable at the end of operation, and high frequency breathing can be employed successfully. In our case, we adopted a suitable breathing strategy, and after receiving satisfactory ABG results, the patient was extubated and admitted to the NICU for observation.

CONCLUSION

The anaesthetic care of a newborn with CCAM can be difficult. In order to give optimal hemodynamic management and ventilatory support, the kind of lesion, cardiac involvement, and intensity of symptoms must all be considered.

• Early detection of CCAM and prompt treatment can save lives.

This case demonstrates how breathing methods were used to address intraoperative desaturation and hypercarbia.

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