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Case report

Anesthetic management in two infants with cystic adenomatoid malformation – Case report☆

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ABSTRACT

This case describes the anesthetic technique used in two symptomatic neonates with a prenatal diagnosis of cystic adenomatoid malformation that underwent surgery under general anesthesia at the San Ignacio University Hospital. One was under one-lung ventilation and ultrasound-guided caudal catheter analgesia and the second one with general anesthesia and two-lung ventilation.

A cystic adenomatoid malformation is a rare pathology with improved outcomes with early diagnosis and management, and a survival rate of over 95%.

Manejo anestésico en dos neonatos con malformación adenomatoide quística. Reporte de caso

Palabras clave:
Anestesia general
Recién nacido
Broncoscopía
Foramen oval permeable
Manejo de la vía aérea

RESUMEN

Se describe la técnica anestésica en dos neonatos con diagnóstico prenatal de malformación adenomatoide quística sintomáticos, llevados a cirugía de resección pulmonar en el Hospital Universitario San Ignacio bajo anestesia general uno de los dos con ventilación unipulmonar y analgesia con catéter caudal guiada por ecografía y el otro con anestesia general y ventilación bipulmonar.

La malformación adenomatoide quística es una patología poco frecuente que mejora su desenlace con el diagnóstico y manejo temprano con una sobrevida mayor al 95%.

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Introduction

Cystic adenomatoid malformations are a rare condition with an incidence of 1 in 10,000 to 1 in 35,000 pregnancies.[1] It is a congenital lesion resulting from the proliferation of the terminal bronchioles preventing the normal development of the alveoli. There is no predilection for gender, race, or laterality and 100% of the cases are diagnosed with echography at 20 weeks. Based on the size of the cysts, the most widely used classification in neonates is Adzick's with type 1 or the macrocystic classification being the most prevalent (58%), versus type 2 or microcystic.[2] The pre-surgical diagnosis shall be done with CT with a sensitivity of 100%.[3]

The purpose of this report is to educate about the anesthetic management at the San Ignacio Hospital for patients with a rare condition.

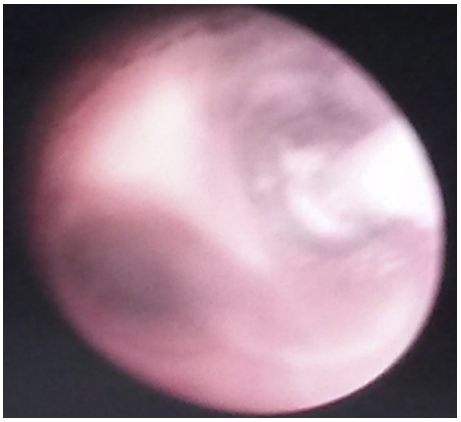

Fig. 2 – Rigid bronchoscopy for one-lung isolation and ventilation with fogarty catheter. Case no. 1.
***Source*: Authors.**

Case reports

Case no. 1

43-week post-conception age male patient with prenatal diagnosis of a right cystic adenomatoid malformation. At birth, the oxygen saturation ranged between 75 and 85%, requiring neonatal ICU admission. The birth weight was 3.2 kg. The pre-surgical paraclinical tests are described in Table 1. The ultrasound scan showed a patent foramen ovale, good biventricular function, mild pulmonary hypertension PSAP 35 mmHg. A CT scan is requested prior to the surgical procedure in order to characterize the lesion (Fig. 1a and b).

Basic monitoring was performed, pre oxygenation with facemask and intravenous induction with fentanyl 3 mcg/kg, lidocaine 1 mg/kg, propofol 1 mg/kg, and for maintaining spontaneous ventilation a rigid bronchospy was performed for inserting a Fogarty catheter 3 French in the right source bronchus for one-lung ventilation (Fig. 2); then orotracheal intubation with a 3.5 fixed tube at 9 cm from the labial commissure was performed uneventfully, invasive monitoring with right radial arterial line and right internal jugular central venous catheter monitoring. For the management of analgesia, a caudal puncture with a pediatric Touhy N 20 needle was performed, and an epidural catheter was advanced up to T6. This space had been previously marked under ultrasound and high frequency transducer. Bupibucaine 0.25% was injected through the catheter in a volume of 1.5 cc^3 visualizing the spread of the local anesthetic through the epidural space at this level (Fig. 3a and b).

Anesthetic management is continued with sevorane at 2 vol % and with the patient in left lateral decubitus with right lung isolation, a 10 cm diameter resection of the right upper lobe malformation was performed. The patient remained hemodynamically stable throughout the procedure, with saturations between 94% and 96%, total bleeding was 10 cc^3, and adequate acid base balance in arterial gases monitoring (Table 1) enabling for the patient's extubation at the end of the procedure and post-operative pain management with thoracic caudal catheter infusion for the next 48 h. This provided adequate respiratory mechanics and early postoperative recovery with hemodynamic stability and no oxygen therapy requirements.

The pathology report of the right upper lobe indicated a Type II cystic adenomatoid malformation and the X-ray control showed adequate pulmonary expansion (Fig. 4).

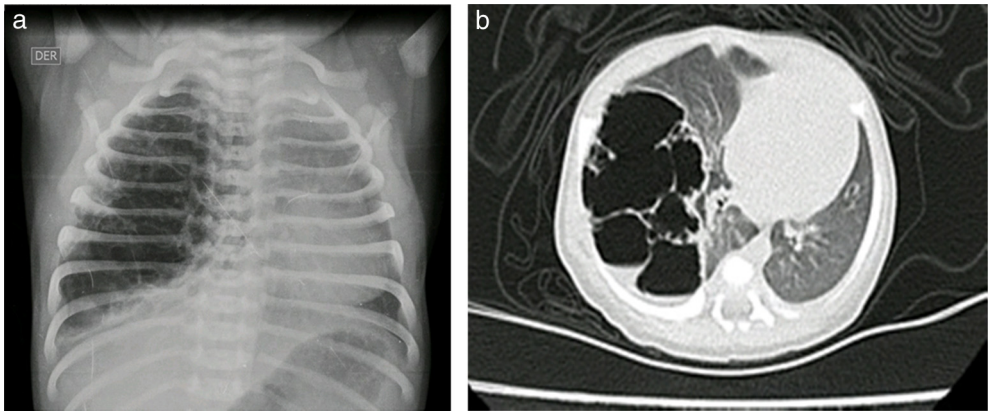

Fig. 1 – (a and b) Pre-surgical chest X-ray and CT case no. 1.
***Source*: Authors.**