

Anaesthetic management for excision of rare right pulmonary glial heterotopia in a post COVID-19 survival paediatric patient

Sir,

Pulmonary glial heterotopia is a rare condition in which lung cyst is lined with glial tissue. The affected children usually present with difficulty in breathing at a young age without any other congenital anomalies.^[1]

Herein we describe the case of a 1-year-old boy weighing 10 kg who presented with shortness of breath (SOB) and dry cough since last one month to the paediatric surgery department. The SOB was gradual in onset and progressive in nature.

The child had similar type of symptoms five months back for which a local practitioner had been consulted. The child was put on anti-tubercular treatment. On non-relief of symptoms, he was referred to us.

The chest radiogram and computed tomography scan showed an 8.5 × 5.6 × 7.2 cm cyst in the lower lobe of the right lung [Figure 1 and 2]. In the meantime patient developed productive cough and fever. Reverse transcription -polymerase chain reaction (RT-PCR) test for coronavirus disease (COVID)-19 was advised and it was positive. The patient was medically managed and discharged home.

Thoracotomy and excision of right lung cyst was planned after patient fully recovered from COVID-19 pneumonitis and became RT-PCR negative. On preoperative examination all vital parameters were within normal ranges. The patient was wheeled into operation theatre and connected to routine monitoring. Premedication was done with intravenous [IV] midazolam 0.5 mg and intravenous fentanyl 15 µg. Induction was done with IV thiopentone sodium 50 mg and IV atracurium 5 mg bolus followed by intubation with a cuffed 4.5-mm endotracheal tube. A single lumen tube was used due to unavailability of an appropriately sized double lumen tube or bronchial blockers. Moreover, there is still a lack of consensus on lung isolation techniques in infants. The patient was put on mechanical ventilation with tidal volume [TV] 100 mL, frequency 10 and peak airway pressure 10 cm H₂O. Surgery was performed in left lateral position.

Intraoperatively transient electrocardiography changes were observed during manipulation, which resolved without any intervention. Maintenance was achieved via a 40:60 ratio of oxygen and nitrous oxide, sevoflurane and intermittent aliquots of atracurium. After 30 minutes there was drop in oxygen saturation (SpO₂) to 85%, the patient was switched to manual ventilation. A large cyst was removed via right posterolateral thoracotomy, and an intercostal drain [ICD] was placed.

On completion of the procedure, the patient was moved into the supine position. Extubation was performed successfully on the operating theatre table. After observing the patient for 15 minutes he was shifted to the paediatric intensive care unit. On the fifth postoperative day ICD was removed and he was

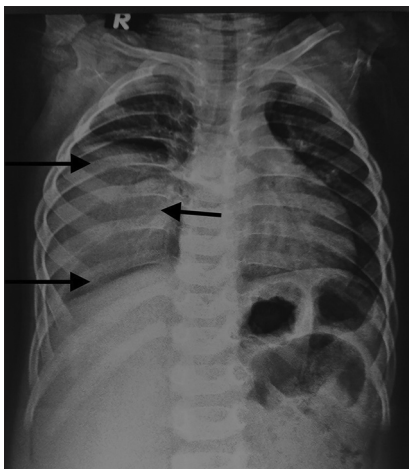


Figure 1: Chest x-ray showing large cyst in right lung

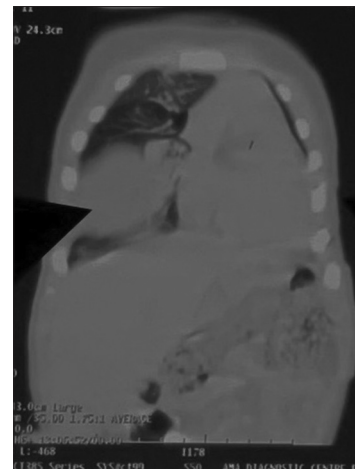


Figure 2: CT chest showing right lung cyst

discharged from the hospital. Histopathology revealed rare lung cyst glial heterotopia.

In unilateral lung disease, an optimal ventilation-perfusion match can be achieved with the lateral decubitus position. In this position, during surgery the healthy lung occupies a dependent position and therefore it receives maximum perfusion and ventilation.^[2] Various lung isolation methods have been described in the literature, such as the use of bronchial blockers, double-lumen tubes, and uniblocker tubes. The advantage of using a single lumen tube is that it is easy to insert, but there may be inadequate collapse of the diseased lung.^[3] Children have smaller airways and the smallest double lumen tube is size 26 Fr, which is suitable for children aged >8 years. For smaller children, placement of a single lumen tube into the desired bronchus or the use of bronchial blockers is recommended.^[4] With endobronchial tube placement, switching from one-lung ventilation to two-lung ventilation is difficult, and the tube may get blocked frequently by blood or secretions. A bigger-sized tube may cause bronchial injury.^[5,6]

Manual ventilation improved SpO₂ because the anaesthesiologists were able to regulate tidal volume and peak airway pressure by constantly adjusting the adjustable pressure limiting valve in synchronisation with surgical steps. It is common in post-COVID-19 patients to have residual shortness of breath and deranged pulmonary function tests suggestive of restrictive lung disease.^[7] The COVID-19 survival child presenting with a history of increasing breathlessness had a rare lung cyst. Double lung ventilation was planned and minute ventilation was maintained by dynamically adjusting TV and respiratory rate with manual ventilation.

In conclusion, we want to emphasise the fact that paediatric thoracotomy should not be avoided due to a lack of ideal resources like double lumen tubes, bronchial blockers, paediatric ventilators. Notably, however, clinicians must remain vigilant and should take all necessary precautions.

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Conflicts of interest

There are no conflicts of interest.

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REFERENCES

1. Morgan T, Anderson J, Jorden M, Keller K, Robinson T, Hintz S. Pulmonary glial heterotopia in a monoamniotic twin. *Pediatr Pulmonol* 2003;36:162-6.
2. Paranjpe JS, Kulkarni RH. One-lung ventilation in pediatric patients. *Med J DY Patil Univ* 2017;10:190-4.
3. Purohit A, Bhargava S, Mangal V, Parashar VK. Lung isolation, one-lung ventilation and hypoxaemia during lung isolation. *Indian J Anaesth* 2015;59:606-17.
4. Picconi F, Temleton TW, Morris B, Valenza F. Pediatric thoracic anesthesia: airway management for lung isolation and postoperative analgesia. *Pediatr Med* 2019;2:23.
5. Fabila TS, Menghraj SJ. One lung ventilation strategies for infants and children undergoing video assisted thoracoscopic surgery. *Indian J Anaesth* 2013;57:339-44.
6. Garg R. Airway management techniques for one lung ventilation in children-what else! *Indian J Anaesth* 2014;58:100-1.
7. Gupta KK, Singh A, Kalia A, Kandhola R. Anaesthetic considerations for post-COVID-19 mucormycosis surgery-A case report and review of literature. *Indian J Anaesth* 2021;65:545-7.

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