

Bilateral empyema thoracis treated simultaneously with video-assisted thoracic surgery and open decortication: a case report and review of the literature

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Empyema thoracis is a complication and a late sequel of untreated pneumonia in children. The reviews published on bilateral empyema are very few. We present a case that was managed bilaterally simultaneously with good results, and we also present a review of the current trend of management of this entity. *Ann Pediatr Surg* 10:10–11 © 2014 Annals of Pediatric Surgery.

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Introduction

Empyema thoracis is a complication and a late sequel of untreated pneumonia in children. Presentation of empyema thoracis involving both the pleural cavities is a rare phenomenon. Most of such cases are traditionally managed either conservatively or by staged thoracotomy. Here, we present a case that was managed bilaterally simultaneously with good results, and we also present a review of the current trend of management of this entity.

Case report

A 1½-year-old male child had a history of fever and cough since 15 days, for which the patient was managed initially by diagnostic pleural tapping and intravenous antibiotics. Pleural fluid culture was positive for *Klebsiella pneumoniae*. The patient underwent primary video-assisted thoracic surgery and the intercostal drain was removed on day 5. The patient's respiratory condition did not improve after the procedure.

At the time of presentation, the patient was febrile with respiratory distress and was underweight, with flaring of alae nasi. Subsequent computed tomography (CT) scan showed bilateral empyema—right upper lobe collapse and consolidation with cystic bronchiectatic changes and loculated pneumothorax. Left-sided loculated empyema in the apical region with pleural thickening is shown in Fig. 1.

On examination, air entry was reduced on both sides, more on the right upper zone and at the base of the left lung.

The patient was planned for the simultaneous management of both the pathologies. Initially, the patient underwent an open thoracotomy on the right side as the CT scan showed upper lobe destruction. After decortication, upper lobectomy was performed (Fig. 2). On the left side, video-assisted thoracotomy decortication was carried out through the fourth intercostal space; also, two working ports were conventionally performed. In the postoperative period, the patient's general condition

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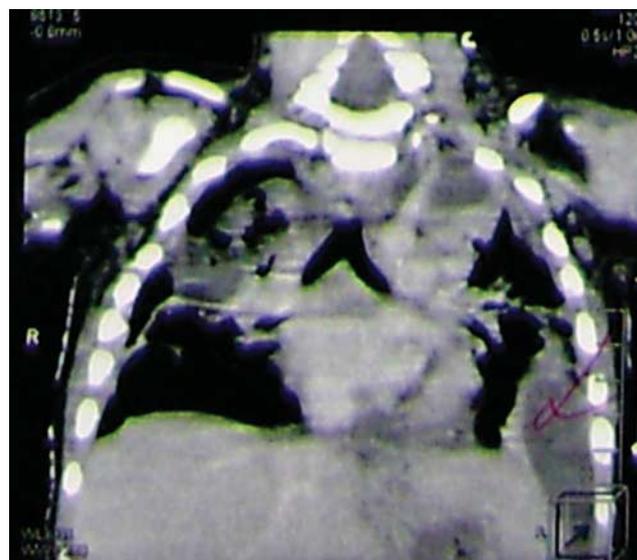
and respiratory distress improved and on day 4, the right intercostal drainage (ICD) was removed but the patient developed pneumothorax on day 5, for which reinsertion of the ICD was performed and exploration was planned as there was persistent bronchopleural fistula. On exploration, there was give-way of stump on the lobectomy site that was resutured and closure was performed.

The patient improved after that, with no febrile episode, and subsequently, ICD was removed and the patient was discharged on day 12. His histopathology indicated the occurrence of an acute inflammatory reaction.

Discussion

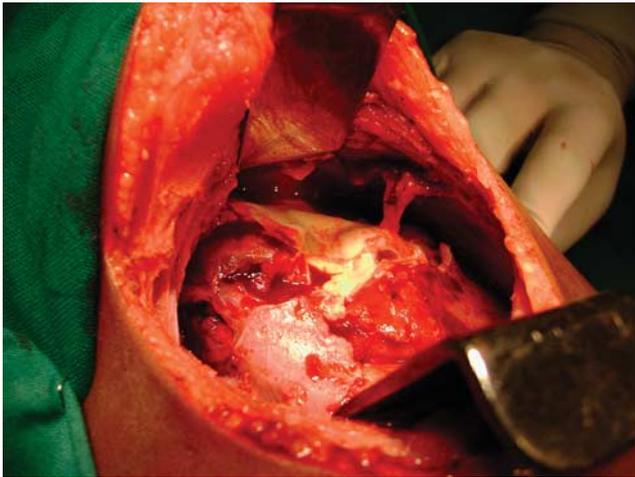
Bronchopneumonia and its sequel are common pediatric respiratory complaints. Parapneumonic effusion is a well-known complication. When this effusion becomes complicated, it forms empyema thoracis, most commonly

Fig. 1



Computed tomography thorax showing bilateral empyema.

Fig. 2



Right thoracotomy.

seen in infants and preschool children. If this is detected at an early stage, it can be managed with antibiotics, antipyretics, and physiotherapy.

Bilateral empyema is a rare phenomenon, accounting for 0.3–7.7% according to various reports of total empyema cases [1,2]. The reviews published on bilateral empyema are few – Scanland in 1928 [3], Bozzotin in 1913 [4], and Keyes in 1931 [1,2]. Very few reports have been published in the last decade on bilateral empyema [5,6].

In a large series of 680 cases on empyema, only 17 cases were bilateral and only six were in the pediatric age group [1]. Most of the bilateral empyema cases are in the adult age group [7].

The most common cause of bilateral empyema in adults is tuberculosis, whereas in children it is pyogenic empyema [7]. Usually, empyema is caused in community-acquired individuals by *Staphylococcus* spp. [8]. No specific organism has been associated with the patients of bilateral empyema, although a few reports have pointed toward *Haemophilus influenzae* as the probable cause [9]; in our case, *K. pneumoniae* was associated with parenchymal destruction and pneumatocele formation [10]. Bilateral empyema is associated with drug abuse [11], immunocompromised status in adults, esophageal perforation [12], nephritic syndrome [13], and central venous lines [14]. Presentation of bilateral empyema is similar to unilateral empyema with fever, cough, and respiratory distress. There are rarely any reports on presentation as cardiac tamponade [15]. In the case of suspected bilateral empyema, a CT scan should be performed first to determine the thickness peel and condition of the underlying lung for an operative decision to be made accordingly.

The concern regarding a surgical intervention is that because of poor pulmonary reserve and incomplete

expansion, there is a risk in performing bilateral empyema, which may also be associated with bronchopulmonary fistula; therefore, traditional teaching focuses either on staged management [3] or on conservative management [16].

However, nowadays, with improved anesthesia techniques and advances in pulmonary medicine with video-assisted thoracic surgery, simultaneous treatment of both sides should be advocated as it removes the infected material; also, a better and early improvement can be achieved [17].

Conclusion

Virulence of an organism and the stage of presentation of a patient and his/her immune status have an important bearing on the outcome and management options. Simultaneous bilateral management of empyema thoracis is a safe and effective method in this era and thoracoscopic decortication is a good modality to achieve this aim in a minimally invasive way.

Acknowledgements

Conflicts of interest

There are no conflicts of interest.

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