Letter to the Editor

Surgical treatment of pleural empyema in children

O tratamento cirúrgico do empiema pleural em crianças

To the editor:

The article by Kang et al.[1], published in the April 2008 issue of the Brazilian Journal of Pulmonology, reinforces the use of video-assisted thoracoscopy or mediastinoscopy for the surgical treatment of pleural empyema in pediatric patients. However, there was no satisfactory characterization of the sample studied. The authors included children with pleural effusion of different etiologies (parapneumonic pleural effusion and tuberculosis) who presented comorbidities, such as diabetes mellitus, which predisposes to worse evolution of the effusion and prolongs hospitalization. In addition, the duration of symptoms prior to hospitalization, as well as the extension of pleural effusion, was not described. These factors have been reported to influence outcomes in patients with complicated parapneumonic effusions.[2]

Preoperative results of pleural fluid testing were never mentioned, nor was the use of thoracocentesis, which could facilitate the initial and early treatment of those patients and serve as a guide for appropriate surgical management of the disease.[3] There was also a limitation regarding the definition of empyema, since only the macroscopic aspect and imaging tests were used, especially if we consider the use of ultrasound, which is examiner-dependent and for which high specificity criteria for the characterization of empyema in children are unavailable. From the therapeutic point of view, it is extremely important to define which type of pleural effusion can be characterized as empyema, and consequently, when drainage is indicated.[4] Although data in the literature are insufficient to establish unequivocal criteria for indicating thoracic drainage in pediatric patients, the same criteria recommended for adults have been used, taking into consideration biochemical and culture tests of the fluid collected during thoracocentesis.[5,6] Currently, pH lower than 7 and glucose lower than 40 mg/dL remain the most specific parameters for predicting the clinical course in children.[3,7] Within this context, pleural fluid testing is still the best method of identifying the stage of pleural effusion so as to prescribe an appropriate treatment.

It is known that the majority of parapneumonic effusions evolve to cure with the use of appropriate antibiotic therapy and thoracocentesis, although some authors have recommended surgical treatment of all children diagnosed with parapneumonic effusion.[2] In the present study, it is of note that one patient had been hospitalized for only five days. Was that actually empyema? With the onset of complicated effusions, fever generally persists for prolonged periods of time, despite appropriate antibiotic therapy and drainage. On average, fever lasts from seven to ten days.

It would have been interesting if the authors had described how many patients were over 13 years of age, since such children have larger chests and the surgical approach is slightly different, occasionally requiring that three incisions be made in order to perform the thoracoscopy. In children older than 13, it is possible to perform intubation using a double-lumen tube, which allows selective ventilation and a better approach to the pleural cavity. Using median age would have better characterized the population under study.

The criteria for chest tube removal were not properly defined. Chest tube removal must be based on the volume of fluid drained in relation to the body weight of the child (mL/kg/day) and not in relation to a preestablished volume (less than 50 mL/24 h). For example, in a 5-month-old child, who would weigh approximately 6 kg, a drainage volume of 50 mL/24 h would be considered high.[5]

The authors reported no open drainage, known as tube thoracostomy, which could have been used in those patients who still presented air leakage but no residual/minimal cavity and no evidence of pulmonary collapse or respiratory dysfunction. Some patients in the sample could have been treated as stated above, with very few risks and fewer complications resulting from the prolonged use of this type of drainage.[3]

In children with empyema submitted to thoracoscopy, drainage time is normally short if there is complete lung expansion. Long-term persistence of effusion in patients submitted to drainage is quite often due to tube obstruction, caused by deposition of fibrin, during the first postoperative days. No surgical procedure for the treatment of pneumatoceles in which there was necrosis of lung parenchyma was reported. When necrotic areas are submitted to debridement, there is rapid resolution of the pleural disease, and consequently, lung expansion. The only segmentectomy performed, as well as the conversions to thoracotomies, was reported not in the results but in the discussion.

The authors did not make it clear why patients who received a Heimlich valve and presented air leakage remained hospitalized, since the implantation of this device atypically leads to early discharge and greater mobility of patients. Why did the patients remain hospitalized? Was it only due to the pleural disease—or was it in order to administer the antibiotic therapy? What were the characteristics of those patients, since using Heimlich valves is still not universally accepted in children? The authors did not mention anything regarding the clinical treatment, such as its duration or changes in the treatment regimen based on the surgical findings.

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Authors' reply

Resposta dos autores

To the editor:

We conducted a retrospective study involving pediatric patients with pleural empyema who were submitted to thoracoscopy. This study underscored the importance of the early participation of a thoracic surgeon in the therapeutic interventions to treat pleural empyema in children. Our focus was on presenting the results of surgical management using thoracoscopy.

We sustain that, in all cases, the indication of thoracoscopy was based on ". . . pleural effusion with no clinical and radiological response to clinical treatment (antibiotics . . . or thoracocentesis) . . . and loculated pleural effusion (documented using ultrasound or computer-based tomography)."[1] As reported in the study, only one patient was, to our surprise (since there were signs of empyema in the tomographic findings, as we will later emphasize), anatomopathologically diagnosed with tuberculosis-related pleural effusion. In addition, only one patient presented comorbidities that predisposed to worse evolution, not only of the pleural effusion but also in other organs and systems. Consequently,