Huge Mediastinal Abscess In A 12-Month-Old Child: Case Report And Review Of The Literature

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Abstract

A 12-month-old highly feverish boy showed progressive dyspnea with a necrotic adenopathy in the axillla upon an extensive anterior mediastinal abscess. The abscess was drained with a suprasternal incision and Staphylococcus aureus was identified. A subsequent antibiotic therapy with tazobactam and clindamycin was performed. In the following recovery was uneventful. In paediatric population aggressive treatment of mediastinal abscesses is needed to obtain full recovery. However, thoracotomy should be avoided in contrast to adults. We present a rare case of a huge non-traumatic mediastinal abscess in a 12-month-old boy. Literature of the last 15 years was reviewed and principals of paediatric surgical approach discussed.

INTRODUCTION

Mediastinal abscesses in children are relatively rare. They usually occur following esophageal perforation and thoracic surgery, respectively (1). However, paediatric non-traumatic mediastinal abscesses are extremely rare. Only eight cases were reported in the literature in the past 15 years. Haematogenous spread from a distant infected site or direct infection of the mediastinum are possible causes of non-traumatic mediastinal infection. We report the successful case management of a huge non-traumatic mediastinal abscess in a 12-month-old boy. The abscess was surgically drained by a suprasternal cervicotomy and subsequently treated with antibiotics to avoid extensive thoracotomy. In the following recovery was uneventful. In this report we discuss the therapeutic strategies and the literature of the last 15 years.

CASE REPORT

A 12-month-old previously healthy boy was referred to our tertiary care university hospital where an empiric antibiotic treatment with amoxicillin/clavulanic acid for suspected pneumonia was already started. The boy was transferred due to deterioration of his general condition. Upon admission he was highly feverish (axillary temperature 40°C) and suffered from progressive dyspnoea. On physical examination a pericardial rub and left pulmonary hypoventilation was noticed. Cellulitis of the left hemithorax was noted and rapidly evolved to multiple abscesses in the left axilla. The abscesses and pleural effusion were drained and Staphylococcus aureus (S. aureus) was identified. White blood cell count was within normal levels and C-reactive protein was 175 mg/l. No abnormality of the immune system was detected. After a short time of recovery the boy's condition deteriorated tremendously with progressive respiratory failure. The chest x-ray showed a widened upper mediastinum with left pleural effusion. Computer tomography (CT) of the chest with intravenous contrast medium revealed a huge mediastinal collection in the left anterior and posterior mediastinum (Fig. 1A).

Figure 1A: Initial thoracic CT Scan at the aortic arch level.
Further investigations such as radionuclide scan and echocardiography revealed no other underlying pathologies. The mediastinal abscess was surgically drained via a suprasternal, horizontal cervicotomy (Fig. 1B) associated to pleural drainage.

Figure 1B: Thoracic CT-Scan after drainage of mediastinal abscess via cervicotomy and left necrotic axillary abscess.

During the same procedure the abscess of the thoracic wall was also drained. Microbiological studies of the drained pus revealed again S. aureus. The antibiotic therapy was changed thereafter to tazobactam and clindamycin considering the resistance to the previous treatment. Subsequently the patient recovered slowly and antibiotic treatment was continued after 10 days with cloxacillin solely for 6 weeks. At follow-up after one month the patient completely recovered and on the CT-scan mediastinal abscess was almost totally absorbed. Eight months after discharge the patient remained without sequelae and thoracic CT scan showed complete absorption (Fig. 2) of the previous mass.

Figure 2: Thoracic CT-Scan at the aortic arch level at the 8-months follow-up. Total resolution

DISCUSSION

Mediastinal abscess formation is a rare entity, especially since the advent of widespread antibiotic treatment. Whereas non-traumatic mediastinal abscesses in children are extremely rare. In general they consequently occur due to an infection in a different organ. They may be a direct extension of bucco-pharyngeal or pulmonary infection by anatomic pathways (2-3). However, some cases of haematogenous spread from a distant infection site (4-5) are also reported. Most likely the mediastinal abscess reported here occurred by haematogenous or lymphatic spread of the axillary abscess. Here lymphatic spread seems to be a reasonable consideration since the anatomic drainage route of the internal mammary lymphatics closely communicate in the upper mediastinum (7).

So far only 8 cases of children with a non-traumatic mediastinal abscess were published in the last 15 years (Table 1).
Age of presentation is very variable, from 15 days to 11 years. There are two patients reported with primary intrathoracic disease where S. pneumoniae was identified. In patients with pharyngeal, retropharyngeal or other distant site of primary infection S. aureus was found by bacteriological analyses. In two patients no causative germ was identified. Recovery was achieved by drainage and antibiotic treatment hence bacteria as causative agent were suspected nevertheless (χ², 456; 0.01; 0.1). Indeed early diagnosis and aggressive treatment of mediastinal infections is of utmost importance to reduce mortality and morbidity (χ²). In addition to the antibiotic therapy, a minimal invasive percutaneous drainage is a very good option to achieve sustained healing (χ²). CT-guided drainage is a good alternative as well (χ²). All but one patients from table 1 were successfully treated with antibiotic therapy and mediastinal abscess drainage. Surgical treatment consisted always of extrathoracic approach. Extensive thoracotomy has not been reported in the published cases. One patient was successfully treated with conservative medical therapy following local retropharyngeal drainage (χ²). In our case, the presented surgical approach was chosen because of pertinent life threatening situation, considering the size of the mass and the urgent need of a sufficient drainage. In most adults nontraumatic mediastinal abscesses are secondary to a descending necrotizing mediastinitis. Their common treatment consists in general of extensive thoracotomy or median sternotomy (χ²; 32; 0.01). By opposition to adults in children extensive thoracotomy usually was avoided in the published articles to prevent thoracic wall and hemithoracic spread (χ²; 32; 0.01).

Paediatric surgeons should keep in mind that non-traumatic mediastinal abscesses extensive thoracotomy is not necessary and may be avoided. Suprasternal cervicotomy to drain the abscess and subsequent appropriate antibiotic treatment for several weeks is, at least in the presented case above, sufficient to provide sustained recovery.

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