Staphylococcal isolated anterosuperior mediastinal abscess of unknown origin

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Abstract

Mediastinal abscess is a rare presentation of infections involving the mediastinum. In rare cases, the origin of the infection cannot be identified. We report a case of a 32-year old male who was presented with a mediastinal abscess with an otherwise clear history. The origin of the infection could not be identified despite extensive investigations. The patient was operated through a cervical incision. His postoperative recovery was uneventful. Rare causes of mediastinal infections should not be overlooked from the diagnostic process even if the origin of infection cannot be identified.

Keywords: Mediastinal • Abscess • Isolated • Unknown origin

INTRODUCTION

Mediastinal infection in most cases evolves acutely and renders a life-threatening disease if not vigorously treated [1]. Such an infection may progress to form a mediastinal abscess. Rarely, haematogenous spread may also lead to the formation of mediastinal abscesses [1]. However, the isolated mediastinal abscess cases where the primary location of infections is not identified are extremely rare.

We herein report a case of a 32-year old male who developed an idiopathic anterior mediastinal abscess without an infectious source.

CASE PRESENTATION

A 32-year old male was referred to our department with retrosternal pain and fever. The patient reported tenderness over his left shoulder which gradually became retrosternal. Additionally, he complained of fever and oedema over his left supraclavicular region. His past medical history was clear except a mild dermal infection in the internal surfaces of his thighs.

Upon admission, he was feverish (37.8°C) with 140/75 mmHg blood pressure, heart rate 115 and 18 bpm. His laboratory findings were: white blood count 13.43 × 10⁹/l, haemoglobin 13.1 g/dl, C-reactive protein 21.9 mg/dl and erythrocyte sedimentation rate 10 mm/h. The chest X-ray performed showed a widened mediastinum (Fig. 1), whereas an anterior mediastinal mass sized 3.4 × 5 cm compatible with an abscess was identified in the thoracic computed tomography (CT; Fig. 2a).

The patient was subjected to surgical excision of the abscess via a trans-cervical incision. After incision, a pre-tracheal plane was developed as in mediastinoscopy, the brachiocephalic artery was found adhering to the surroundings, whereas the pus collection was encapsulated in the pre-vascular area. Blunt dissection in this pre-vascular compartment led to the aspiration of the pus collection. A drain was left in situ. The patient became afebrile immediately after surgery and all laboratory tests improved. Staphylococcus aureus was isolated from the tissue and the pus cultures, and therefore he remained on intravenous antibiotic treatment (vancomycin).

The resected tissue was proven to be a typical abscess (necrotic tissue and inflammatory infiltrates, surrounded by a fibrous wall) as per the histopathology report.

The rest of the examinations performed included cardiac ultrasound, blood cultures, tuberculosis tests, abdominal ultrasound and viral antigens which all turned out negative. An oral examination was additionally performed but did not reveal noteworthy findings.

The patient was subjected to another thoracic CT scan (Fig. 2b) 5 days postoperatively, which was fairly improved.

The mediastinal drain was removed on the 10th postoperative day based on the results of the new CT scan, a negative drain culture and the clinical status of the patient.

His postoperative recovery was uneventful despite an H1N1 flu infection for which he received additional antiviral therapy for another 5 days. He was eventually discharged 15 days after surgery. His further course was totally uneventful, and he was doing well 4 months later with a normal chest CT-scan.

DISCUSSION

Mediastinal abscesses may be formed as a result of mediastinum infections. However, they may develop under unknown circumstances without an obvious or traceable infectious source.
They usually develop as a complication of cardiac or thoracic surgery, after perforation of the aerodigestive tract (iatrogenic, spontaneous or traumatic) or after descending oropharyngeal infections [1–3]. Rare causes of mediastinal abscesses include involvement of neighbouring organs such as rupture of thymic cysts with the mediastinum being the only site of infection [4]. An extremely rare site of the infectious origin can be the skin, developing bacteraemia and haematogenous spread of skin flora pathogens [1, 5]. Additionally, infectious diseases rarely appear with a mediastinal abscess as the only manifestation [6]. Rare reports describing cases in which the origin of infections could not be identified have already been published [7, 8]. These mediastinal abscesses are considered to be primary isolated or idiopathic [7, 8]. However, the reports describing such mediastinal abscesses with unknown origin are extremely scanty in the literature. In our case, the site of origin of the infection was not possible to be identified and was therefore considered a primary isolated abscess.

In most mediastinal infections, one or more underlying risk factors such as diabetes mellitus and others are usually identified [5]. In our case, no such risk factor was reported or identified whatsoever, since the patient was young with a clear history.

The microbial profile usually depends on the site of origin of the infection. If S. aureus and Staphylococcus epidermidis are isolated, then the skin flora can be assumed as the origin of the infection [1]. In rare cases of oropharyngeal infections, however, S. aureus may be again isolated. S. aureus was isolated in the abscess of our patient indicating skin flora as the origin of the infection.

Imaging is important in providing information about the mediastinum. The CT scan delineates the infectious process and the abscess formation, with the loss of fat planes and the presence of gas bubbles being some of the usual findings.

The mainstay of treatment of mediastinal infections include aggressive surgical treatment supported by antibiotic therapy [2, 3]. The percutaneous catheter drainage is reported to be an effective and less aggressive treatment measure [2]. The surgical approach is chosen based on the extension and the location of the inflammation with cervical incision being adequate for superior mediastinal infiltrations [2]. More radical incisions however may be needed to obtain a more radical control of mediastinal sepsis [2].

In conclusion, clinicians should suspect mediastinal inflammatory involvement even if no apparent origin can be identified. They should also consider the possibility of primary mediastinal involvement without an apparent infectious source despite their thorough investigations. Diagnosis is usually straightforward, whereas surgery is almost always indicated in such cases.

Conflict of interest: none declared.

REFERENCES