A Rare Cause of Retropharyngeal Abscess: Cervical Pott’s Disease

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ABSTRACT
Tuberculosis (TB) disease is commonly caused by Mycobacterium tuberculosis. Tuberculosis is known to affect almost every organ in the body, but its manifestations in the head and the neck region are quite rare. Tuberculous retropharyngeal abscesses are exceptional. They are usually secondary to tuberculosis of the spine. We report one case of cervical Pott’s disease revealed by a retropharyngeal abscess. The clinical presentation was dysphagia with bilateral neck swelling. Radiological findings suggested the diagnosis, showing a retropharyngeal collection with vertebral osteolysis. The histological assessment confirmed the diagnosis showing several granulomas with central caseous necrosis. The evolution was favorable after drainage and anti-tuberculosis drugs. Vertebral tuberculosis is rare. Cervical Pott’s disease is exceptional, and retropharyngeal abscesses can be the revealing feature of this condition. Symptoms are not specific. The diagnosis is based on radiological and bacteriological assessment. Treatment implicates a multidisciplinary team, first the evacuation of the collection, then anti-tuberculosis chemotherapy.

Key Words: Anti-tuberculosis therapy, cervical spine, retropharyngeal abscess, surgical drainage, tuberculosis.

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INTRODUCTION
Retropharyngeal abscess (RPA) is uncommon[1]. It’s formed between the pharyngeal fascia and the prevertebral fascia. It is usually associated with direct extension of infection in the retropharyngeal lymph nodes in patients suffering from upper respiratory tract infection or of penetrating trauma of the head and neck region, granulomatous disease, and cervical spine spondylodiscitis[2].

Spinal tuberculosis (Pott’s disease), the most common form of skeletal tuberculosis, can cause serious morbidity, including permanent neurologic deficits, severe deformities[3] and tuberculous retropharyngeal abscess.

CASE REPORT
A 32-year-old female with neither past medical history of pulmonary tuberculosis nor an immunosuppression disease, presented with a 4-month history of progressive dysphagia, odynophagia and weight loss.

On examination, the patient was febrile. She had an anterior displacement of the posterior pharyngeal wall with overlying congested mucosa, with no imminent airway compromise. There was no trismus. A bilateral palpable tender upper neck swelling of about 5 cm was found. The palpation of the cervical spine was very painful. The physical examination was otherwise unremarkable.

Laboratory investigations revealed white blood cell (WBC) count of 9400/mm 3, C-reactive protein (CRP) of 86mg/dl, erythrocyte sedimentation rate (ESR) of 75 mm in h1. The tuberculin skin test was positive and the throat swab for Mycobacterium tuberculosis and HIV serology were negative. Her chest X-ray was normal with no evidence of active or healed tuberculosis disease.

A contrast-enhanced computed tomography (CT) scan demonstrated a ring-enhancing lesion in the retropharyngeal space measuring 15*8*4 cm at the level of C3 suggestive of an RPA associated with marked erosion of the anterior arch of the third and the seventh cervical vertebrae with rarefaction of the first and the second thoracic vertebra body. It also showed enlarged lymph nodes at level II and V on the left and the right side of the neck. (Figure 1)

Fig.1: A contrast-enhanced CT scan on admission, sagittal section and axial section: revealed massive abscesses with ring enhancement in the retropharyngeal space with marked erosion of the anterior arch of the third cervical vertebra.
Under general anesthesia, the drainage of the abscess was performed through an intraoral vertical incision in the posterior pharyngeal wall. Specimens were taken to perform the Ziehl-Neelsen staining, the Gram staining and a cytologic examination.

The sputum culture was negative for Mycobacterium tuberculosis.

Tissue biopsy from the wall incision showed several granulomas with central caseous necrosis, surrounded by numerous epithelioid cells, lymphocytes and multinucleated Langhans giant cells. The diagnosis of tuberculosis was established.

Based on these findings, we diagnosed the abscess as tuberculous RPA associated with Pott’s disease.

A treatment associating four anti-tuberculosis drugs, including isoniazid, rifampicin, ethambutol and pyrazinamid, was initiated for 2 months, followed by isoniazid and rifampicin for 10 months.

The patient was followed also by an orthopedic surgeon because of the vertebral erosion. No surgical treatment was recommended and she was treated with immobilization using a neck collar.

A long follow-up was necessary. A repeat CT of the neck; 18 months later; showed a complete disappearance of the neck abscess and the erosion of the anterior arch of third cervical vertebra C3. There were no residual lymph nodes (Figure 2).

**DISCUSSION**

The retropharyngeal space is a potential space bounded by the posterior pharyngeal wall anteriorly and the alar layer of the prevertebral fascia posteriorly. This space lies between the pharynx and the prevertebral fascia and extends from the base of the skull into the mediastinum[6]. This space contains lymph nodes that drain lymph from the nasopharynx, teeth, paranasal sinuses and middle ear[8].

Acute retropharyngeal abscesses are usually seen in children of less than 5 years of age. This is rare in adults because the lymph nodes in the retropharyngeal space usually disappear after age 4 to 5 years[6]. In this case, the probable route of spread to the retropharyngeal space is via the lymphatics, to a persisting retropharyngeal lymph node. In rare cases, the abscess may be due to hematogenous spread[9].

Tuberculosis involvement of the retropharyngeal space is uncommon[9]. It is usually due to spinal tuberculosis[9]. These affections occur often in the lower thoracic and the upper lumbar spine for adults and in the upper thoracic spine for children[9].

The involvement of the cervical spine is also uncommon in tuberculous spondylodiscitis (Pott’s disease), constituting 2-3% of cases of tuberculosis spine[9]. The tuberculosis infection extends through intervertebral disks to multiple vertebrae and soft tissues, thus forming an abscess[9].

The complaints are a neck pain (often present for months before diagnosis), dysphagia, dyspnea, hoarseness of voice and the sensation of a foreign body in the throat. The classic symptoms of tuberculosis such as weight loss, night fever, and cachexia are usually not seen[9]. Symptoms and signs of cord compression and kyphotic deformity may be seen when tuberculosis affects the cervical spine[10]. Our patient had odynophagia, dysphagia and neck pain. The lateral soft-tissue X-ray of the neck has a role in establishing the diagnosis of retropharyngeal abscess. It may demonstrate prevertebral soft tissue swelling posterior to the pharynx. It may also demonstrate spine alterations[11].

An increase in the prevertebral soft tissue shadow in a standard radiograph is a useful guide to resort to CT scan/MRI to diagnose tuberculous RPA[4].

The contrast-enhanced CT scan shows a low-density area with ring enhancement suggesting the presence of an abscess. It provides bony details such as irregular lytic lesions, sclerosis and disk collapse. It demonstrates the extent of soft tissue, particularly in epidural and paraspinal tissue. CT scan may reveal the presence of calcification, which is inconstant but common in tuberculous lesions[13].

The radiological findings of tuberculous spondylodiscitis and pyogenic infection are different. Tuberculous spondylodiscitis is characterized by frequent and extensive destruction of the vertebral body, leading to spine damages such as deformity and spinal cord compression. It is also characterized by the development of paraspinal abscesses and involvement of epidural space[14]. Tuberculous infections may affect several vertebral levels as seen in our case. MRI is the imaging method of choice for early diagnosis of a spondylodiscitis. The typical signal pattern in spondylodiscitis is a low signal on T1-weighted images and high signal intensity on T2-weighted images[8]. MRI is the most effective imaging study for demonstrating neural compression[13,15] and assessing vascular complications such as internal jugular vein thrombosis. It is also invaluable in the post therapeutic course[16].
Tuberculous retropharyngeal abscess is diagnosed by finding Mycobacterium tuberculosis in the aspirated pus, confirmed by acid-fast bacilli on Ziehl-Neelsen staining. The diagnosis can be established by the typical histopathologic appearance of the abscess wall as done in our case.

The Polymerase Chain Reaction (PCR) is one of the sensitive and specific techniques of amplification and detection of specific DNA fragments of the microorganism. It is useful in diagnosing extrapulmonary tuberculosis and detecting mutations associated with drug resistance.

Both the tuberculin skin test and interferon-γ release assays are indirect tests that indicate a cellular immune response to recent or remote sensitization with mycobacterial antigens. Neither test can distinguish between individuals with latent tuberculosis infection, active tuberculosis or even past tuberculosis contamination.

Considering the high percentage of patients having other organs affected by tuberculosis, evidence of systemic TB should be always excluded at the time of diagnosis, thus a chest x-ray examination should be done. In our case the chest X-ray was normal with no evidence of active or healed tuberculosis disease.

Extra-pulmonary tuberculosis is common among HIV infected patients. Therefore, it should be emphasized that every patient with tuberculosis must be screened for the HIV infection, particularly in cases of extra-pulmonary tuberculosis. In the case of our patient, the results of serologic tests for HIV were negative.

Therapy with standard anti-tuberculosis drugs, combined with drainage when necessary, is associated with a high success rate. The abscess may be drained via a transoral approach or through a cervical incision in front of and medial to the carotid sheath. Our patient responded well to transoral aspiration and anti-tuberculosis therapy.

The topic of whether external drainage for RPA is necessary has been controversial. The drainage of a retropharyngeal abscess is not normally necessary and it should be planned unless it is large and involves other deep neck compartments. Therapeutic aspiration can be performed by opt for imaging guidance and can be repeated if necessary.

However, a recent study has shown that most patients with deep neck infections could be treated successfully with only antibiotics.

The role of surgery in tuberculosis spine is controversial too. According to literature, there were no statistically significant differences between conservative treatment with anti-tuberculosis drugs and operative treatments regarding kyphosis, neurological deficit, bony fusion, spine erosion, or bone loss. Some studies have demonstrated that all anti-tuberculosis drugs penetrate well into the vertebral lesions and are efficient in terms of pain relief, decrease in neurological deficit, and even correction of spinal deformity. These results are seen in most of patients (82-95%) with spinal tuberculosis. Tuli, in 1975, proposed a conservative treatment with multi-drug chemotherapy.

We followed Tuli’s attitude in our case and we immobilized the cervical spine with a neck collar. Concerning the duration of chemotherapy, the standard recommended regimen is 6-9 months of isoniazid and rifampicin, supplemented in the first 2 months with pyrazinamide and ethambutol, but in patients with multiple vertebral involvement, cervical lesions, or major neurologic involvement a duration of 9-12 months is recommended. In our case the duration of the treatment was 12 months because of the multiple spine involvement. The outcome of anti-tuberculosis drugs is excellent as seen in our case. After the treatment of 12 months, no recurrence was reported.

CONCLUSION

Retropharyngeal abscess in association with cervical tuberculosis vertebral osteomyelitis remains a rare disease. The unusual presentation of extrapulmonary tuberculosis presents a challenge to its diagnosis. CT and MRI have made early diagnosis much easier. With the currently available anti-tuberculosis drugs, surgery is infrequently needed, and clinical and radiological outcomes are good.

CONFLICT OF INTEREST

There are no conflict of interest.

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