Tuberculous Retropharyngeal Abscess Associated with Spinal Tuberculosis Well Controlled by Fine-needle Aspiration and Anti-tuberculous Chemotherapy

Kenji Mizumura¹, Tatsuya Machino², Yoshihiro Sato¹, Takashi Ooki¹, Kengo Hayashi³, Yoshiko Nakagawa¹, Makiko Fukunaga¹, Maki Sato¹, Kouji Kiyofuji¹, Shinichi Hayashi¹, Tomoko Kobayashi¹, Takayuki Yoshizawa⁴, Noriaki Takahashi¹ and Shu Hashimoto¹

Abstract

We present a rare case of a tuberculous retropharyngeal abscess (RPA) associated with spinal tuberculosis (TB) (Pott’s disease). A patient presented with RPA and collapse of the second cervical vertebra. Fine needle aspiration was performed through the pharynx, not only for diagnosis but also for reduction of the abscess. Tuberculous RPA was diagnosed by microbiological tests of the aspirated fluid from the abscess, which was likely to be extended from Pott’s disease. Anti-TB chemotherapy after the aspiration proved effective, resulting in the resolution of the abscess. Early diagnosis and treatment are essential in order to prevent life-threatening complications.

Key words: tuberculous retropharyngeal abscess, spinal tuberculosis, pott’s disease, fine needle aspiration

(Int Med 49: 1155-1158, 2010)
(DOI: 10.2169/internalmedicine.49.3353)

Introduction

Most cases of retropharyngeal abscesses (RPA) are associated with medical complications or trauma. Non-traumatic RPA has been reported to be a complication due to infection of retropharyngeal lymph nodes mainly in infants and young children (1, 2). Non-traumatic RPA in adults is rare, since retropharyngeal lymph nodes usually regress after 4 or 5 years of age (3). However, several reports have demonstrated adult cases of tuberculous RPA, which are often accompanied by spinal tuberculosis (TB) (Pott’s disease).

A deep neck abscess is a life-threatening condition, preferably treated in its early stages by intravenous antibiotic therapy. However, in its advanced stages, surgical drainage becomes mandatory (4). In this article, we describe a case of tuberculous RPA with Pott’s disease. The patient was successfully treated with fine-needle aspiration and anti-TB chemotherapy.

Case Report

A 79-year-old man presented with the complaint of neck pain for the past month. The pain was continuous, but he was not febrile. He visited our hospital and was admitted for neck dissection. He had a three-year history of treatment for pulmonary TB, which had developed 25 years earlier. Plain lateral radiograph of the cervical spine showed partial destruction of the C2 and increased prevertebral soft tissue shadow (Fig. 1). A contrast-enhanced computed tomography (CT) scan demonstrated a ring-enhancing lesion in the retropharyngeal space suggestive of an RPA and collapse of the anterior angle second cervical vertebra. Abscesses in both lateral regions of the second cervical vertebra were also detected (Fig. 2A).

Abscess drainage was required for diagnosis and treatment. Open drainage was not necessary because the abscess could be drained intraorally. As he showed no manifestation...
Figure 1. Plain lateral radiograph of the cervical spine showing partial destruction of C2 (black arrow) and increased prevertebral soft tissue shadow (double-ended white arrow) along with straightening of the cervical lordosis. The depth of the soft tissue was 11.4 mm.

Figure 2. A: A contrast-enhanced CT scan on admission revealed massive abscesses with ring enhancement in the retropharyngeal space and both lateral regions of the second cervical vertebra. B: A contrast-enhanced CT scan in the first month after the start of anti-TB chemotherapy revealed an improvement in the abscesses.

of paralytic symptoms, he was a poor candidate for orthopedic surgery. We performed an intraoral aspiration of the RPA by needle, and 60 mL of reddish brown pus was discharged (Fig. 3). Ziehl-Neelsen staining was positive and TB-DNA was detected by polymerase chain reaction (PCR). The aspirated fluid was also culture positive for *M. tuberculosis*.

On the basis of these findings, we diagnosed the abscess as tuberculous RPA associated with Pott’s disease. He did not receive immunosuppressive medications, nor did he have any disease that causes immunosuppression (e.g., congenital immunodeficiencies, HIV infection, lymphoma or other malignancies). Although a combination therapy of four anti-TB drugs, including isoniazid, rifampicin, ethambutol and pyrazinamide, was interrupted for four weeks because of gastrointestinal bleeding and drug-induced liver dysfunction, there was a marked resolution of the abscess in the first month (Fig. 2B). Anti-tuberculosis drug susceptibility testing showed all drugs had high efficacy. After the 6-month treatment, no recurrence of tuberculous RPA was reported, however, the patient developed heart failure and died.
The current patient presented with a one-month history of neck pain, and a CT scan demonstrated RPA and collapse of the anterior angle of the second cervical vertebra. An increase in the prevertebral soft tissue shadow in a standard radiograph is a useful guide to resort to CT scan/MRI to diagnose tuberculosis of C1 and C2 regions and tuberculous RPA (11). The normal depth of the retropharyngeal soft tissue overlying C2 averages 4 mm. Soft tissue greater than 7 mm is pathologic (12). As the depth of this patient’s soft tissue was 11.4 mm, it was thought to be abnormal. The increased prevertebral shadow was seen along with straightening of the cervical lordosis. CT scans and magnetic resonance imaging (MRI) are useful imaging techniques in these situations. The contrast-enhanced CT scan finding of a low density area with ring enhancement suggests the presence of an abscess. MRI findings of low signal intensity on T1-weighted images and high signal intensity on T2-weighted images suggest the same thing (13). When a CT scan and/or MRI demonstrate these findings in the retropharyngeal space, drainage and chemotherapy should be considered in order to prevent life-threatening complications.

Figure 3. Reddish brown pus was aspirated from the retropharyngeal abscess (RPA) by needle.

Discussion

Tuberculous RPA is often secondary to chronic TB of the cervical spine, as pus spreads directly through the anterior longitudinal ligament (5). However, RPA caused by TB is rare, because it has been reported that 1-5% of all patients hospitalized with TB have skeletal TB, with only 7% of these involving the cervical spine (6, 7).

The retropharyngeal space lies between the pharynx and the prevertebral fascia and extends from the base of the skull into the mediastinum. A deep neck abscess may be life threatening because of the possibilities of airway obstruction, involvement of the carotid sheath, spread into the mediastinum, or septic shock. The mortality rate of patients with such life-threatening complications is as high as 40-50% (8, 9). Early diagnosis is crucial in order to prevent these complications. Patients presenting with RPA commonly report an insidious onset, fever, neck pain, dysphagia and hoarseness (10).

The current patient presented with a one-month history of neck pain, and a CT scan demonstrated RPA and collapse of the anterior angle of the second cervical vertebra. An increase in the prevertebral soft tissue shadow in a standard radiograph is a useful guide to resort to CT scan/MRI to diagnose tuberculosis of C1 and C2 regions and tuberculous RPA (11). The normal depth of the retropharyngeal soft tissue overlying C2 averages 4 mm. Soft tissue greater than 7 mm is pathologic (12). As the depth of this patient’s soft tissue was 11.4 mm, it was thought to be abnormal. The increased prevertebral shadow was seen along with straightening of the cervical lordosis. CT scans and magnetic resonance imaging (MRI) are useful imaging techniques in these situations. The contrast-enhanced CT scan finding of a low density area with ring enhancement suggests the presence of an abscess. MRI findings of low signal intensity on T1-weighted images and high signal intensity on T2-weighted images suggest the same thing (13). When a CT scan and/or MRI demonstrate these findings in the retropharyngeal space, drainage and chemotherapy should be considered in order to prevent life-threatening complications.

The topic of whether or not external drainage for RPA is necessary has been controversial. If an obvious large abscess is found by a clinical examination, drainage should be planned. Open drainage of the abscess is not normally necessary but should be carried out through a cervical incision and approach in front of and medial to the carotid sheath (14). An alternative to open drainage of a neck abscess would be the use of imaging-guided aspiration or catheter insertion (3). However, a recent study has shown that most patients with deep neck infections could be treated successfully with antibiotics alone (15). Criteria for external drainage depend on clinical or radiological suspicions that the abscess involves other deep neck compartments. In this case, his RPA was large and abscess drainage was required for diagnosis, so we aspirated the RPA intraorally by needle. As TB-DNA was detected by PCR, the patient was diagnosed with a tuberculous RPA and underwent anti-TB chemotherapy.

The incidence of chronic RPA is on the rise as a result of the resurgence of TB secondary to human immunodeficiency virus infection (5). A proper history and careful examination are important for making an early diagnosis. A combination of anti-TB chemotherapy and as-needed aspiration may be optimal in cases of tuberculosis RPA. Early diagnosis and treatment are essential in order to prevent life-threatening complications.

References