

CASE REPORT

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A rare case as different cause of retropharyngeal and spinal epidural abscess: spondylodiscitis

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Abstract

Background: Retropharyngeal abscess (RPA) is a life-threatening, dangerous condition and uncommon in adults. The coexistence of RPA, cervical spinal epidural abscess (CSEA), and spondylodiscitis is extremely rare.

Case presentation: We present a case with a retropharyngeal and epidural abscess caused by spondylodiscitis. A 61-year-old man was referred to our clinic with the complaints of sore throat, limitation in neck range of motion, numbness, and weakness in the left arm and the left ear for one month. The airway was not obstructed. Neurological deficits were detected in his left arm. Cervical computed tomography revealed a 50 × 30 × 15 mm retropharyngeal abscess. Cervical magnetic resonance imaging showed abscess, C5–6 spondylodiscitis and epidural abscess, and myelopathic signal changes in the C3–7 spinal cord. The abscess was drained, and C5–6 discectomy was performed. The patient was discharged with cervical collar and antibiotics.

Conclusions: Multidisciplinary approach that consists of otolaryngologist, neurosurgeon, and infectious disease specialist is needed to avoid complications and any delay.

Keywords: Discitis, Epidural abscess, Retropharyngeal abscess

Background

Retropharyngeal abscess (RPA) is a life-threatening, dangerous condition and uncommon in adults. The incidence of RPA in adults is unclear; however, it is 4.1 per 100,000 in pediatric population [1]. Trauma in adults and suppurative lymphadenitis after upper respiratory tract infections in children (especially under 5 age) are the main causes of RPA. Diabetes, poor oral hygiene, intravenous drug abuse, and immunodeficiency are the other reasons for RPA [2, 3]. Cervical spine epidural abscess (CSEA) is also a rare condition with the incidence of 19.6 per 100,000 [1]. The risk factors are similar with RPA. Head and neck infections were historically the main cause of

CSEA; however, neurosurgical procedures are, nowadays, a common reason [4].

Spondylodiscitis encompasses osteomyelitis of the vertebrae and intervertebral discs. Different names for this condition have been used to describe such as vertebral osteomyelitis, spinal osteomyelitis [5]. The incidence of spondylodiscitis is 7.4 per 100,000, and coexistence of RPA, CSEA, and spondylodiscitis is extremely rare [1]. Besides life-threatening conditions in these patients, permanent neurological defects can occur if spondylodiscitis is not treated.

We present a case with a retropharyngeal and epidural abscess caused by spondylodiscitis.

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Case presentation

A 61-year-old man was referred to our clinic with complaints of sore throat, limitation in neck range of motion, numbness, and weakness in the left arm and the left ear for 1 month. There was no fever or dysphagia. Hyperemia in the oropharynx, tenderness, and pain in the left lateral of the neck with deep palpation were detected in his physical examination. Furthermore, detailed neurological examination showed hypoesthesia in the left arm, and the muscle strength of the left arm was 4 of 5 at flexion and 2 of 5 at extension and the muscle strength of left fingers was 2 of 5 at abduction and adduction. His previous medical history was free from diabetes mellitus, trauma, or any other medical diseases. The fiberoptic examination disclosed that the airway was not obstructed; however, the posterior wall of the pharynx was swollen and hyperemic.

The peripheral white blood cell count was $6860/\text{mm}^3$, C-reactive protein was elevated to 32 mg/dl, and sedimentation was 90 mm/h. A cervical contrast-enhanced computed tomography (CT) revealed a $50 \times 30 \times 15$ mm abscess at the retropharyngeal area anterior to the C3–7 vertebrae, heterogeneity at the corpus of the C5–7 vertebrae, a slight loss of height at the C6 vertebra, and a lytic formation with a diameter of 1 cm in the C7 vertebra (Fig. 1). Cervical vertebrae magnetic resonance imaging (MRI) showed RPA, C5–6 spondylodiscitis and epidural abscess, and myelopathic signal changes in the C3–7 spinal cord (Fig. 2). Besides, lytic formation in the C7 vertebra was thought of as a hemangioma.

The empirical antibiotic therapy (cefepime, 3 g, three times a day and teicoplanin, 400 mg, once a day) was started immediately. The patient was transferred to a neurosurgery clinic for surgery for both abscess and

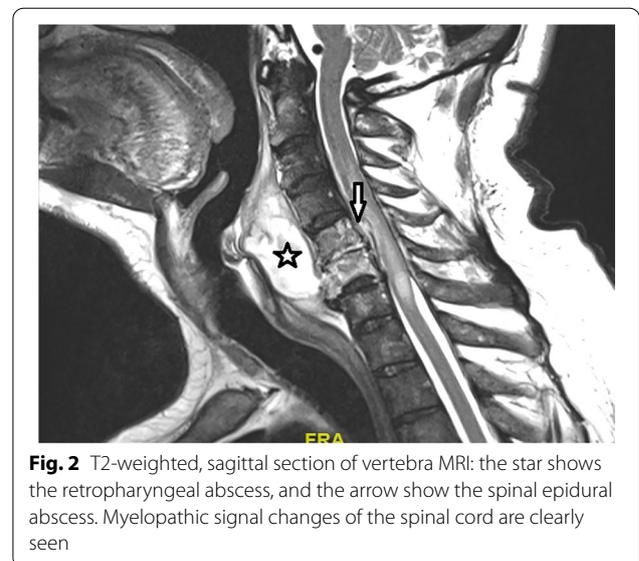


Fig. 2 T2-weighted, sagittal section of vertebra MRI: the star shows the retropharyngeal abscess, and the arrow show the spinal epidural abscess. Myelopathic signal changes of the spinal cord are clearly seen

spondylodiscitis. Intraoperatively, the abscess was drained and sent for culture, tuberculosis polymerase chain reaction (PCR), and *Brucella* agglutination. C5–6 discectomy was also performed with an anterior cervical approach. There was no complication at the intraoperative or postoperative period. Neck stabilization with a cervical collar was recommended.

The pus culture, *Brucella* agglutination, and tuberculosis PCR results were negative. Methicillin-resistant *Staphylococcus epidermidis* reproduced in blood culture. However, it was decided that it was contamination from the skin. Histopathological examination revealed only inflammation. The patient discharged one week after the operation with ciprofloxacin (750 mg, twice a day) and



Fig. 1 Axial and sagittal sections of CT: the stars show the retropharyngeal abscess, and the arrows show the degeneration of C5–6 vertebrae

teicoplanin (400 mg, once a day) according to suggestions from a specialist of infectious diseases. The total antibiotic use after discharge was 42 days. When the medical therapy ended, the muscle strength of the left arm and left fingers were 4 of 5; however, hypoesthesia was still going on. Physical therapy was recommended to the patient. Control cervical MRI was performed postoperative second year to the patient and showed myelopathic signal changes at the level of the C5–6 vertebra (Fig. 3). The patient had no complaint at postoperative 4.5 years, the muscle strength of the left arm and fingers were 4–5 of 5, and he had minimally hypoesthesia on his left arm.

Discussion

The three layers of cervical fascia enclose the contents of the head and neck and occur in spaces for potential infections. The fascia of the neck limits the direct spread of infection; however, the connections between spaces cause spread of infection to this defined anatomical areas. Therefore, this is the basis of mortal complications of deep neck infection. The retropharyngeal space extends from the skull base down to the mediastinum, and it is bounded by carotid sheaths laterally, buccopharyngeal fascia anteriorly, and prevertebral fascia posteriorly [1, 6].

Trauma from foreign bodies or surgical instruments is the major cause of RPA, and nontraumatic RPA is very rare in adults. This is because of the regression of

retropharyngeal lymph nodes at the age of 4–5 years. Therefore, RPA is more frequent before 4–5 years. Nontraumatic RPA is mainly caused by immunodeficiency such as diabetes, human deficiency virus, intravenous drug abuse, and cirrhosis [7].

Cervical spondylodiscitis also known as cervical vertebral osteomyelitis (CVO) is a rare and serious condition that causes permanent neurological deficits. It is expected that abscess formation like CSEA and RPA is a complication of CVO because of the proximity of these structures. The cervical region is less common than the thoracic or lumbar region; however, the mortality and morbidity are more frequent than others [5].

The RPA is often caused by polymicrobial agents, and *Streptococcus pyogenes*, *Staphylococcus aureus*, and *Haemophilus influenzae* are more common agents that are responsible for RPA [8]. The empiric use of antibiotic therapy before surgical drainage may be the reason not to reproduce any agent in our case.

The diagnosis of RPA with CSEA and CVO starts with a suspicion of paravertebral infection. Sore throat, dysphagia, “hot potato” voice, restriction and pain on neck movements, fever, dyspnea, stridor, tachypnea, and neurological deficits are the most common complaints of RPA with CVO and CSEA [1, 6]. Neurological impairment of CVO is between 68 and 80% [7]. Therefore, the patient is questioned for neurological deficit before RPA symptoms. Cervical CT is the most useful radiological examination for the diagnosis of RPA; however, it is necessary to perform MRI to make certain diagnosis of RPA, CSEA, and CVO and to exhibit the compression to the spinal cord without any delay to avoid mortal and morbid complications such as mediastinitis, carotid rupture, sepsis, jugular venous thrombosis, and permanent neurological deficits [6].

The treatment strategy for RPA, CVO, and CSEA consists of both medical therapy and surgery. Furthermore, tuberculosis must be excluded. Drainage of abscess, debridement and decompression of the spinal canal, and cervical stabilization are the often used surgical approach [9]. The anterior approach is the preferable choice for these coexistences [1]. The use of long-term antibiotics according to culture results is also needed.

Conclusions

CVO is an extremely rare cause of coexistence with RPA and CSEA; however, the mortal and morbid complications make them very important. Multidisciplinary approach that consists of otolaryngologist, neurosurgeon, and infectious disease specialist is needed to avoid complications and any delay.



Fig. 3 Postoperative second year control, T2-weighted, sagittal section of vertebra MRI: the arrow shows the myelopathic signal changes of the spinal cord

Abbreviations

RPA: Retropharyngeal abscess; CSEA: Cervical spine epidural abscess; CT: Computed tomography; PCR: Polymerase chain reaction; MRI: Magnetic resonance imaging; CVO: Cervical vertebral osteomyelitis.

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Authors' contributions

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Consent for publication

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Competing interests

The authors declare that they have no competing interests.

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References

- Epstein N (2020) Diagnosis, and treatment of cervical epidural abscess and/or cervical vertebral osteomyelitis with or without retropharyngeal abscess; a review. *Surg Neurol Int.* 11:160
- Jain A, Singh I, Meher R, Raj A, Rajpurohit P, Prasad P (2018) Deep neck space abscesses in children below 5 years of age and their complications. *Int J Pediatr Otorhinolaryngol.* 109:40–43
- Joshua J, Scholten E, Schaerer D, Mafee MF, Alexander TH, Crotty Alexander LE (2018) Otolaryngology in critical care. *Ann Am Thorac Soc.* 15(6):643–654
- Eggart MD, Greene C, Fannin ES, Roberts OA (2016) A 14-year review of socioeconomic and sociodemographics relating to intracerebral abscess, subdural empyema, and epidural abscess in southeastern Louisiana. *Neurosurgery.* 79(2):265–269
- Almansour H, Pepke W, Akbar M (2020) Pyogenic spondylodiscitis. *Orthopaed.* 49:482–93
- Vieira F, Allen SM, Stocks RMS, Thompson JW (2008) Deep neck infection. *Otolaryngol Clin North Am.* 41(3):459–483
- Sakaguchi A, Ishimaru N, Ohnishi H et al (2017) Retropharyngeal abscess with cervical discitis and vertebral osteomyelitis caused by *Escherichia coli* in a patient with liver cirrhosis. *Infez Med* 25(2):169–173
- Tollard E, Choussy O, Bertrand M, Thiébot J, Dacher JN, Marie JP (2007) Prevertebral abscess mimicking a retropharyngeal abscess and revealing a double-location spondylodiscitis: case report. *J Neuroradiol.* 34(2):141–143
- Giordan E, Marton E, Scotton G, Canova G (2019) Outcomes and risk factors for spontaneous spondylodiscitis: case series and meta-analysis of the literature. *J Clin Neurosci.* 68:179–187

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