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- A Case Report -

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Multifocal Extensive Spinal Tuberculosis Accompanying Isolated Involvement of Posterior Elements - A Case Report -

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Study Design: A case report.
Objectives: To report a rare case of atypical spinal tuberculosis.
Summary of Literature Review: In spinal tuberculosis, non-contiguous multifocal involvement and isolated involvement of posterior elements of the spine have been considered atypical features. There have been a few reports of each of these atypical features but no reports have described spinal tuberculosis with both of these atypical features.
Materials and Methods: A 39-year-old man presented with back pain and progressive weakness of both lower extremities. He was diagnosed with spinal tuberculosis from the cervical to sacral spine, showing multifocal non-contiguous involvement with multiple abscesses on magnetic resonance imaging. Notably, in the thoracic spine area, isolated involvement of posterior elements was found with an epidural abscess compressing the spinal cord. He underwent a total laminectomy of the thoracic spine and multiple abscesses were drained with pigtail catheter insertions into the cervical, thoracic, and lumbar spine.
Results: At the 8-month follow-up, the patient's neurologic status had improved to Frankel Grade D, and the patient was able to walk with the support of a walker. At the 3-year follow-up, the patient had recovered completely without any neurologic deficit.
Conclusions: Since atypical spinal tuberculosis may show various patterns, examination of the entire spine is important for early diagnosis. Treatment should be provided properly from minimally invasive procedures to open surgery depending on the extent of structural instability and neurologic deficit.

Key words: Spine, Atypical tuberculosis, Decompression

Introduction

Typically, in spinal tuberculosis, there is paradiscal involvement of anterior parts of the adjacent vertebral bodies. This classic spinal tuberculosis has been well-described and readily diagnosed.1 However, because atypical spinal tuberculosis shows various patterns of spinal involvement without the typical radiologic lesion, it is often misdiagnosed and mistreated.2 Atypical features of spinal tuberculosis include the following: involvement of single isolated vertebral body, circumferential or pan-vertebral involvement, extradural cord compression without radiologic evidence of bony involvement, sacral tuberculosis, involvement of the posterior elements (neural arch) of the spinal column without involvement of the anterior elements, multifocal spinal involvement which may be discontinuity or non-contiguous.3-6

Here, we present a patient with multifocal extensive spinal tuberculosis from the cervical to sacral spine with isolated involvement of posterior element of thoracic spine.

Case Report

A sedentary worker, 39-year old male, presented with
Based on the multiple signal changes on scout images of cervical and thoracic spine, a cervical and thoracic spinal MRI was obtained. In the cervical spine, high signal intensities were found in the C4 vertebral body and posterior osteoligamentous structures of the C3-C5 levels. On an enhanced sagittal T1-weighted image with fat suppression and an axial T2-weighted image, right paravertebral abscess formation was discovered from C3 level to the C5 level with right posterior epidural compression (Fig. 2).

Thoracic sagittal T1-weighted MRI images with fat suppression revealed isolated abscess formations of posterior element at the T2 and T4-T6 levels. The abscess at T2 had no epidural compression. However, the abscess extending from T4 to T6 caused severe epidural compression. At the T9-T11 levels, a paravertebral abscess with intensity changes of vertebral body and lamina was seen on the left side (Fig. 2).

A total laminectomy at the T2-T6 levels was carried out to decompress the spinal cord and remove abscesses. The intraoperative specimens were harvested for biopsy. Fusion was not performed because there was no structural instability or kyphotic deformity. Paraspinous abscesses in cervical, thoracic and lumbosacral spine were drained using fluoroscopic-guided pigtail catheters (Fig. 3). The patient was treated with a four drugs regimen for tuberculosis (pyrazinamide, isoniazid, rifampin, ethambutol) for 12 months. The final diagnosis of tuberculosis was confirmed by histopathology examination showing caseation necrosis and granuloma. Moreover, on a skin
Extensive Multifocal Spinal Tuberculosis with Isolated Posterior Involvement

Among the multifocal non-contiguous spinal tuberculosis, extensive involvement of whole spine is rarer and there have only been two case reports in the literature. Turgut reported a 53-year-old woman who had spinal tuberculosis in her cervical, thoracic and lumbar spine with psoas abscess. Emel et al described a 17-year-old girl who had tuberculosis involvement from cervical to sacral spine with paravertebral abscesses.

Similarly, our patient also had extensive involvement of biopsy of the posterior thigh, the lesion was determined as the squamous cell carcinoma.

ESR/CRP normalized after 2 months of steady medication. At the 8 month follow-up, the patient’s neurologic status had improved to Frankel Grade D and the patient was able to walk under walker assistant. At the 3-year follow-up, the patient had recovered completely without any neurologic deficit.

Discussion

In spinal tuberculosis, an isolated involvement of posterior element or the multifocal non-contiguous spinal tuberculosis with intervening normal vertebrae have rarely been reported and considered to be atypical spinal tuberculosis.

Fig. 2. Magnetic resonance images of the cervical and thoracic spine. (A) An enhanced sagittal T1-weighted image. In the cervical spine, the cord compressing the epidural abscess with high signals in the C4 vertebral body and posterior osteoligamentous structures of the C3-C5 levels was found. In the thoracic spine, two abscesses limited to the posterior elements of the T2 and T4-T6 levels were revealed. Notably, the posterior epidural abscess of the T4-T6 level was compressing the spinal cord, causing progressive neurologic deficits. (B) An axial T2-weighted image of the C4 level showing a huge right paravertebral abscess and spinal cord deviation to the right side by the right posterior epidural abscess (white arrow). (C) Severe cord compression (white arrow) by a huge posterior abscess involving the posterior epidural space and posterior elements on an axial T2-weighted image at the C5-C6 intervertebral disc level. (D) A left-sided anterior paravertebral abscess with involvement of the vertebral body, pedicle, and lamina at the T10 level on the axial T2-weighted image.

Fig. 3. Plain radiographs of the cervical, thoracic, and lumbosacral spine after pigtail catheter insertions. (A) Pigtail insertion into the right paravertebral area at C3 to C4. (B) Pigtail insertion into the left paravertebral area at T8 to T11. (C) Pigtail insertion into the right paravertebral area.
tuberculosis from the cervical to sacral spine as observed in the aforementioned cases. However, in thoracic spine of our patient, there was additionally isolated involvement of posterior element at the T4–T6 levels with posterior epidural abscesses. Isolated involvement of the posterior elements or neural arch is atypical tuberculosis in the spine. This occurs rarely in less than 6% of patients with spinal tuberculosis. To our knowledge, there have been no reports which address spinal tuberculosis with isolated posterior involvement and multifocal non-contiguous involvement from cervical to sacral spine as presented in our case.

The patient was treated with a total laminectomy on the posterior epidural abscess causing progressive neurologic deficit. Since other abscesses in cervical, thoracic and lumbosacral spine did not cause progressive neurologic deficit or structural instability requiring urgent surgery, percutaneous pig-tail catheters were inserted to treat the abscesses. The percutaneous catheterization in drainage of paravertebral tuberculous abscesses of spine has been described as an effective and safe procedure.

In the current case, although the primary origin of infection was not identified, considering the squamous cell carcinoma on his posterior thigh, it is thought his immune system had been compromised.

In conclusion, since atypical spinal tuberculosis may show various patterns, examination of entire spine is important for early diagnosis. Surgical treatment should be provided properly from minimally invasive procedures to open surgery depending on structural instability and neurologic deficit.

REFERENCES

후방부 단독침범을 동반한 다발성 광범위 척추 결핵 - 1례 보고 -

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연구 계획: 증례 보고
목적: 비전형 척추 결핵의 증례 보고

선행연구문헌의 요약: 척추결핵에 있어서 비연속성 다발성 침범 이나 후방부 단독 침범은 비전형적 형태이다. 이전 문헌에 있어 이와 같은 두 비전형적 형태가 동시에 나타난 경우에 대한 사례에 대한 보고가 없다.

대상 및 방법: 39세 남자가 요통과 점진적인 양측 하지의 근력약화를 보였다. 자기공명영상상 경추에서 천추까지 이르며 농양을 동반한 다발성 비연속성 척추 결핵이 확인되었다. 홍추에서는 후방부에서 단독침범하여 척수를 압박하고 있는 경막 외 농양이 확인되었다. 홍추에 대해서 척추궁 전절제술을 통한 감압을 시행하였고 경추에서 요추에 이르는 다발성 농양에 대해서는 pigtail 도관을 이용한 배액을 시행하였다.

결과: 8개월 추시관찰에서 Frankel Grade D의 신경학적 호전을 보였고 보행기 보조 하에 보행이 가능하였다. 3년 추시관찰에서 신경학적으로 완전한 호전을 보였다.

결론: 비전형 척추 결핵은 다양한 양상으로 나타나므로 조기 진단을 위해서 전 척추에 대한 검사가 중요하다. 치료는 척추의 구조적 안정성과 신경학적 증상을 고려하여 최소침습적인 치료부터 관절적 수술까지 적절하게 시행되어야 한다.

색인 단어: 척추, 비전형 결핵, 감압술

약칭 제목: 후방부 단독침범을 동반한 광범위 다발성 척추결핵

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