CASE REPORT / OLGU SUNUMU

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Salmonella enteritidis-Associated Thoracic Spondylodiscitis with Paraspinal Abscess in an Immunocompetent Adult: First Case Report from Türkiye

İmmünkompetan Bir Erişkinde *Salmonella enteritidis* ile İlişkili Torasik Spondilodiskit ve Paraspinal Apse: Türkiye'den Bildirilen İlk Olgu

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Abstract

Salmonella enteritidis, a non-typhoidal Salmonella (NTS) serotype, rarely causes spondylodiscitis and typically affects immunocompromised individuals. We report the first documented case of *Salmonella enteritidis*-associated thoracic spondylodiscitis in an immunocompetent adult from Türkiye. A 32-year-old previously healthy male presented with chronic back pain. Magnetic resonance imaging revealed T7–T8 spondylodiscitis with a right-sided paraspinal abscess. Blood cultures were sterile; however, cultures from the drained abscess grew *Salmonella* spp., identified as *Salmonella enteritidis,* by matrix-assisted laser desorption/ionization time-of-flight mass spectrometry and serotyping. Histopathological examination showed abundant polymorphonuclear leukocytes. The patient received eight weeks of antibiotic therapy: two weeks of intravenous ceftriaxone followed by six weeks of oral ciprofloxacin, resulting in complete clinical and laboratory recovery. This case underscores the importance of considering NTS in the differential diagnosis of vertebral infections, particularly in regions endemic for tuberculosis and brucellosis.

Keywords: Immunocompetent, *Salmonella enteritidis,* spondylodiscitis, thoracic osteomyelitis, Türkiye

Öz

Tifo dışı Salmonella (NTS) serotiplerinden biri olan *Salmonella enteritidis*, nadiren spondilodiskite neden olmakta ve genellikle immünkompromize bireylerde görülmektedir. Bu raporda, Türkiye'den immünkompetan bir erişkinde *Salmonella enteritidis* ilişkili torasik spondilodiskit olgusu ilk kez sunulmaktadır. Otuz iki yaşındaki, önceden sağlıklı erkek hasta kronik sırt ağrısı ile başvurmuştur. Manyetik rezonans görüntülemede T7–T8 düzeyinde spondilodiskit ve sağ paraspinal alanda apse saptanmıştır. Kan kültürleri steril olmakla birlikte, drene edilen apse kültüründe *Salmonella* spp. üremiş, tür düzeyinde *Salmonella enteritidis* olarak tanımlanmıştır. Histopatolojik incelemede yoğun polimorfonükleer lökosit infiltrasyonu izlenmiştir. Hasta iki haftalık intravenöz seftriakson ve ardından altı haftalık oral siprofloksasin tedavisi olmak üzere toplam sekiz haftalık antibiyotik tedavisiyle tamamen klinik ve laboratuvar iyileşmesi göstermiştir. Bu olgu, özellikle tüberküloz ve brusellozun endemik olduğu bölgelerde, vertebral enfeksiyonların ayırıcı tanısında NTS etkenlerinin de göz önünde bulundurulması gerektiğini vurgulamaktadır.

Anahtar Kelimeler: İmmünkompetan, *Salmonella enteritidis*, spondilodiskit, torasik osteomyelit, Türkiye

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Introduction

Salmonella enteritidis, a non-typhoidal Salmonella (NTS) serotype, is primarily associated with foodborne gastroenteritis. Rarely, it can cause focal infections, including spondylodiscitis, via hematogenous dissemination. These infections typically occur in patients with predisposing conditions such as sickle cell disease, leukemia, immunosuppression, aortic aneurysms, or solid organ malignancies[1–4].

Several cases of vertebral osteomyelitis and epidural abscess due to *Salmonella enteritidis* have been reported, mainly from the United States, Europe, and Asia, and most involved immunocompromised hosts[1–9]. In Türkiye, only one case has been reported, involving a patient receiving immunosuppressive therapy for rheumatoid arthritis[10].

We present the first documented case of *Salmonella enteritidis*-associated thoracic spondylodiscitis with paraspinal abscess in an immunocompetent adult from Türkiye, contributing to the limited literature on this uncommon clinical presentation.

Case Report

A 32-year-old previously healthy male presented with a three-month history of progressive thoracic back pain. The pain was mechanical in character and was not associated with fever, weight loss, night sweats, or gastrointestinal symptoms. Physical examination revealed mild tenderness over the thoracic spine without deformity or scoliosis. Neurological examination was unremarkable, and other systemic findings were within normal limits.

Laboratory investigations showed a white blood cell count of 8,300/µL, erythrocyte sedimentation rate of 17 mm/h (reference < 20 mm/h), and C-reactive protein level of 8.7 mg/L (reference < 5 mg/L). Thoracic magnetic resonance imaging (MRI) demonstrated spondylodiscitis at the T7–T8 level with a right-sided paraspinal abscess. Imaging showed T1 hypointense and T2/short tau inversion recovery (STIR) hyperintense signal changes predominantly involving the T7 and T8 endplates, with increased T2/STIR signal intensity in the intervertebral disc space. Post-contrast images revealed marked enhancement of the endplates and disc. A right-sided paraspinal lesion measuring approximately 9 mm, consistent with an abscess extending anteriorly, was also observed. These findings were compatible with spondylodiscitis and paraspinal abscess.

Given the endemic nature of tuberculosis and brucellosis in Türkiye, these infections were initially considered; however, both Quantiferon-TB Gold and Brucella agglutination tests were negative. Blood cultures remained sterile.

The patient underwent surgical drainage, debridement, and posterior stabilization due to progressive symptoms and the presence of the paraspinal abscess. Cultures of intraoperatively obtained abscess material yielded bacterial growth. Colonies were identified as *Salmonella* spp. using matrix-assisted laser desorption/ionization-time-of-flight mass spectrometry (MALDI-TOF MS; Bruker Daltonics, USA), and serotyping according to the Kauffmann–White–Le Minor scheme (SSI Diagnostica, Denmark) confirmed the isolate as *Salmonella enteritidis*. Histopathological examination of the abscess wall revealed acute inflammatory infiltrates with abundant polymorphonuclear leukocytes. Antimicrobial susceptibility testing showed the isolate was susceptible to ampicillin, trimethoprim-sulfamethoxazole, chloramphenicol, ceftriaxone, and ciprofloxacin.

Further evaluation excluded hematologic disorders, immunosuppressive conditions, and vascular pathologies, including infected aortic aneurysm. Transthoracic echocardiography showed no evidence of endocarditis or cardiac involvement.

The patient received intravenous ceftriaxone for two weeks, followed by oral ciprofloxacin for six weeks, totaling eight weeks of targeted antimicrobial therapy according to the 2015 Infectious Diseases Society of America (IDSA) guidelines. This treatment resulted in full clinical, laboratory, and radiological resolution. Follow-up MRI demonstrated complete resolution, and no recurrence was observed during one year of follow-up.

Discussion

Spondylodiscitis is a severe spinal infection associated with significant morbidity, particularly when the thoracic spine is involved. Globally, the most common causative agents are *Staphylococcus aureus*, *Mycobacterium tuberculosis*, and *Brucella* species, with geographical and epidemiological factors influencing this distribution[1,11]. In Türkiye, both tuberculosis and brucellosis remain endemic, with Brucella seroprevalence estimated at approximately 4.5%[12]. Accordingly, these pathogens are typically prioritized in the initial differential diagnosis of spinal infections.

The 2015 IDSA Clinical Practice Guidelines for Native Vertebral Osteomyelitis recommend serologic testing for Brucella and interferon-gamma release assays for *Mycobacterium tuberculosis* in patients presenting with vertebral infections, particularly in endemic regions[1]. However, when these tests are negative or the clinical presentation is atypical, less common pathogens, including NTS, should be considered.

In our case, both blood cultures and standard serological tests for Brucella and tuberculosis were negative. The pathogen was identified only after surgical drainage of a paraspinal abscess, highlighting the limitations of relying solely on blood cultures and endemic pathogens for diagnosis. This emphasizes the importance of direct sampling from the infected site for microbiological confirmation.

Vertebral involvement due to *Salmonella enteritidis* is extremely rare, particularly in immunocompetent individuals. Most reported cases involve immunosuppressed patients or those with significant comorbidities such as hematologic malignancies, sickle cell disease, or vascular infections[2–9]. For example, Ikejiri et al.[8] described a case of *Salmonella enteritidis* vertebral osteomyelitis complicated by meningitis following influenza A infection, while Tomek et al.[5] reported a case associated with a mycotic aortic aneurysm in a patient with chronic lymphocytic leukemia. In contrast, our patient had no underlying disease or predisposing condition, making this presentation particularly unusual.

Diagnostic confirmation was achieved by MALDI-TOF MS and serotyping after specimen collection from the infection site. This approach aligns with the 2015 IDSA guidelines and the comprehensive review by Lew and Waldvogel, both emphasizing early MRI-based imaging and microbiological confirmation for pathogen-specific diagnosis[1,11].

The patient received two weeks of intravenous ceftriaxone followed by six weeks of oral ciprofloxacin, totaling eight weeks of targeted antimicrobial therapy in accordance with IDSA recommendations. This regimen led to full clinical, laboratory, and radiological recovery and is consistent with IDSA guidance suggesting 6–12 weeks of pathogen-specific therapy for vertebral osteomyelitis, depending on clinical response[1].

To our knowledge, this is the first reported case of *Salmonella enteritidis* spondylodiscitis in an immunocompetent adult from Türkiye, specifically involving the thoracic spine with a paraspinal abscess.

Clinical implications of this case include:

• In endemic regions, Brucella and *Mycobacterium tuberculosis* should be ruled out first; however, rare pathogens such as *Salmonella enteritidis* should be considered in atypical or culture-negative cases.

• Blood cultures may not always detect the causative pathogen; therefore, image-guided biopsy or surgical sampling is essential.

• Treatment should follow pathogen-specific guidelines with an adequate duration of antibiotics.

• Clinicians must recognize that invasive Salmonella infections can occur even in immunocompetent individuals.

This case broadens the clinical spectrum of *Salmonella enteritidis* infections and highlights the importance of guideline-based diagnostic and therapeutic strategies in spinal infections.

Ethics

Informed Consent: Written informed consent was obtained from the patient for publication of this case and accompanying clinical data.

Footnotes

Conflict of Interest: The author declare no conflict of interest.

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