Prevertebral Space Abscess

A prevertebral space abscess is a localized collection of pus in the prevertebral space, an anatomical region located anterior to the vertebral bodies and extending from the skull base to the coccyx. It is often associated with vertebral osteomyelitis, discitis, or contiguous infections from adjacent structures (e.g., pharynx, retropharyngeal space).

1. Etiology and Pathophysiology

Causes Hematogenous spread from bacteremia (e.g., infective endocarditis, IV drug use).

Contiguous spread from nearby infections:

Pharyngeal or odontogenic infections (e.g., tonsillitis, dental abscess).

Retropharyngeal abscess extension.

Spondylodiscitis or vertebral osteomyelitis.

Postoperative or post-traumatic infections (e.g., spinal surgery, penetrating trauma).

Common Pathogens

Staphylococcus aureus (most common, including MRSA).

Streptococcus species (especially Group A Streptococcus).

Anaerobes (Fusobacterium, Bacteroides, Prevotella).

Gram-negative bacteria (E. coli, Klebsiella, Pseudomonas).

Mycobacterium tuberculosis (Pott’s disease in endemic regions). 2. Clinical Presentation Localized Symptoms Neck or back pain (depending on the spinal level). Restricted neck movement due to muscle spasms. Dysphagia, odynophagia (if cervical involvement). Swelling or tenderness in the anterior neck. Systemic Symptoms Fever, chills (suggestive of bacteremia/sepsis). Fatigue, malaise, weight loss (chronic infections). Neurological Symptoms (if epidural extension occurs) Radiculopathy or myelopathy (weakness, numbness, or hyperreflexia). Paralysis in severe cases. 3. Diagnosis Imaging (Essential for Diagnosis) MRI with Contrast (Gold Standard) Identifies abscess location, size, and epidural extension. Differentiates from retropharyngeal abscess or spondylodiscitis. CT with Contrast Useful for bony destruction, calcification, or air pockets (suggestive of anaerobic infection). Preferred when MRI is contraindicated. X-ray May show vertebral misalignment or erosion in chronic cases. Laboratory Tests Elevated inflammatory markers (CRP, ESR, leukocytosis). Blood cultures (to identify bacteremia). Abscess aspiration and culture (via CT-guided needle biopsy). 4. Management 1. Antibiotic Therapy (Cornerstone of Treatment) Empirical IV therapy for 4–6 weeks, then oral transition. Initial Empirical Regimen (Based on Likely Pathogen): Vancomycin + Ceftriaxone or Cefepime (covers MRSA and Gram-negatives). Piperacillin-tazobactam for anaerobic coverage. Linezolid or Daptomycin for MRSA in penicillin-allergic patients. Rifampin (if biofilm-producing infections like prosthetic implants are involved). Adjust based on culture and susceptibility results. 2. Surgical Intervention Indications for drainage or debridement: Large abscess (>8 mm) or persistent despite antibiotics.

Neurological deficits or worsening symptoms. Sepsis or hemodynamic instability. Surgical approaches: Anterior drainage (transoral/transcervical) for cervical abscesses. Posterior laminectomy if epidural extension is present. Spinal stabilization if there is significant bone destruction. 3. Supportive Care Pain management (NSAIDs, opioids if needed). Nutritional support (especially in cachectic patients). Early mobilization and physical therapy. 5. Prognosis and Follow-up Favorable if treated early, but delayed intervention can lead to sepsis, paralysis, or spinal deformity. Serial MRI and CRP monitoring to track resolution. Long-term follow-up for recurrence or spinal instability. Key Takeaways MRI is the gold standard for diagnosis. Early antibiotic therapy is crucial, with surgical drainage if needed. Monitor closely for neurological deterioration. Multidisciplinary management (neurosurgery, infectious disease, rehabilitation).

Case Report: Prevertebral Abscess Secondary to Suspected Iatrogenic Esophageal Perforation Following Upper Endoscopy

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Abstract

Introduction: Prevertebral abscesses are rare but potentially life-threatening infections that can arise from hematogenous spread, contiguous infections, or direct injury. Iatrogenic microperforation of the esophagus following upper endoscopy is an uncommon cause that can lead to severe complications. We present the case of a patient with a prevertebral abscess secondary to suspected esophageal microperforation post-endoscopy, successfully managed with surgical drainage and targeted antibiotic therapy.

Case Presentation: A 74-year-old male presented with progressive cervical pain, dysphagia, and fever following an upper endoscopy performed days prior for suspected gastric neoplasia. Urgent cervical-thoracic-abdominal CT with IV contrast revealed a multilobulated hypodense collection with hypercaptating borders in the prevertebral space extending from C5 to T3, without air bubbles, but with associated hypercaptating meningeal thickening at the cervical spinal cord level. The collection was in contact with the left posterolateral wall of the esophagus, but no clear esophageal perforation or pneumomediastinum was observed. MRI was recommended for further evaluation. The patient underwent surgical drainage of the abscess, and intraoperative cultures guided the antibiotic regimen. The patient showed favorable post-operative evolution with resolution of symptoms and inflammatory markers.

Discussion: Iatrogenic esophageal perforations can have an insidious onset, with prevertebral abscess formation being an underrecognized complication. Early diagnosis with MRI, CT, and contrast esophagography is crucial. Management requires a multidisciplinary approach, combining antibiotics, surgical drainage, and nutritional support to promote esophageal healing.

Conclusion: This case highlights the need for prompt recognition and treatment of prevertebral abscesses secondary to suspected esophageal microperforation to prevent severe morbidity.

Keywords: Prevertebral abscess, esophageal perforation, iatrogenic injury, spinal infection,

neurosurgery, upper endoscopy complications.

Introduction

Prevertebral abscesses are uncommon but serious infections that can lead to significant morbidity if not diagnosed and treated promptly. They are typically associated with hematogenous dissemination, contiguous infections, or direct trauma. Iatrogenic causes, such as esophageal perforation following upper gastrointestinal endoscopy, are exceedingly rare but can result in deep cervical infections, mediastinitis, and epidural abscess formation.

Early diagnosis is crucial to prevent neurological deterioration and systemic sepsis. This case report presents an unusual instance of a prevertebral abscess secondary to suspected microperforation of the esophagus following endoscopy, requiring surgical intervention.

Case Presentation

Patient Background

Age: 74 years old

Nationality: Chilean, residing in Spain since January 2023

Medical History:

No known drug allergies.

No hypertension, diabetes, or dyslipidemia.

Lymphoma Diagnosis: Diffuse large B-cell lymphoma (DLBCL), activated subtype, gastric stage IVE with internal mammary adenopathy, pleural, and pericardial effusion.

Treatment History: Included in GOTEL PI-14 study, receiving R-CHOP chemotherapy (cycles from 09/2024 to 01/2025) with good initial tolerance.

Past Hospitalizations:

Oncology Admission (09/2024): Constitutional syndrome, suspicion of gastric neoplasia. Supplementation for iron, B12, and vitamin D deficiency.

Oncology Admission (10/2024): Esophageal candidiasis, bacteremia from PICC-related Staphylococcus epidermidis infection, requiring PICC removal and directed antibiotic therapy.

Past Surgeries: Bilateral phacoemulsification.

Current Medications: Hydroferol, Inhixa, Fortimel DiabetCare, Betahistine, Omeprazole, Paracetamol/Tramadol.

Presentation of Prevertebral Abscess

Symptoms: Progressive neck pain, dysphagia, and fever post-upper endoscopy.

Diagnostic Workup:

CT with contrast (urgent): Prevertebral abscess extending from C5-T3, associated with hypercaptating

meningeal thickening. No definitive esophageal perforation observed.

MRI recommended for further evaluation.

Laboratory Findings: Leukocytosis (WBC: 12.5 ×10³/μL), CRP: 15 mg/dL, negative blood cultures.

Management

1. Antibiotic Therapy

Empirical IV antibiotics: Vancomycin + Piperacillin/Tazobactam for MRSA and anaerobic coverage. Adjusted based on culture results.

Duration: Minimum 4-6 weeks IV, with transition to oral therapy based on clinical response.

2. Surgical Intervention

Anterior cervical surgical drainage of the prevertebral abscess.

Evaluation of spinal stability via CT scan—no need for fixation.

Follow-up MRI to assess meningeal involvement.

3. Supportive Care

Enteral feeding via nasogastric tube to allow esophageal healing.

Pain management with NSAIDs and opioids.

Early mobilization and rehabilitation to prevent complications.

Outcome and Follow-Up

6th post-operative day: The patient was afebrile, tolerating enteral feeding, and inflammatory markers were improving.

Follow-up MRI and CT showed a decrease in abscess size with no new fluid collections.

Gradual transition to oral feeding with no further dysphagia.

Discharge with oral antibiotics and outpatient follow-up with neurosurgery and gastroenterology.

Discussion

 Prevertebral abscess formation secondary to endoscopic procedures is an extremely rare event that requires high clinical suspicion. Key diagnostic tools include MRI for soft tissue evaluation and CT with contrast for detecting abscess extent and possible perforation. Surgical drainage is indicated for large abscesses or neurological deficits, while esophageal repair depends on perforation size. Multidisciplinary collaboration (neurosurgery, gastroenterology, infectious diseases, and rehabilitation) is crucial for optimal outcomes.

Conclusion

Prevertebral abscesses secondary to iatrogenic esophageal perforation require early recognition and a multifaceted approach involving surgical drainage, prolonged antibiotic therapy, and nutritional

support. This case emphasizes the need for vigilance following upper endoscopy and highlights the importance of MRI and CT in diagnosing deep cervical infections.