

Case Report

A CASE OF FATAL ACUTE EMPHYSEMATOUS THYROID ABSCESS CAUSED BY ESCHERICHIA COLI IN AN ELDERLY FEMALE

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ABSTRACT

Background: Acute emphysematous thyroid abscess is a rare, life-threatening infection. Escherichia coli is an exceptionally uncommon cause.

Case Presentation: An 85-year-old female with a long-standing multinodular goiter presented with a rapidly enlarging, painful neck swelling, fever, dysphagia, and stridor. Imaging revealed a large, gas-forming abscess. Despite emergency aspiration and antibiotics, she succumbed to septic shock. Culture confirmed E. coli.

Discussion: This case highlights the virulence of E. coli in this context and underscores that a pre-existing goiter is a significant risk factor. It emphasizes that emphysematous thyroid abscess is a surgical emergency where percutaneous drainage may be insufficient if definitive surgery is delayed.

Conclusion: This fatal outcome underscores the need for a high index of suspicion, prompt CT imaging, and aggressive early surgical management for emphysematous thyroid abscess, even when caused by atypical pathogens like E. coli.

Keywords: Emphysematous Thyroiditis, Thyroid Abscess, Escherichia coli, Multinodular Goiter, Septic Shock.

INTRODUCTION

Thyroid gland infections are rare due to its anatomical and physiological defences. Acute emphysematous thyroid abscess, characterized by gas formation, is a severe, life-threatening subset. While often caused by anaerobes, infection with *Escherichia coli* is extraordinarily rare. This report presents a fatal case in an elderly female with a multinodular goitre, illustrating associated diagnostic and therapeutic challenges.

2. Patient Information

Demographics: 85-year-old female.

Main Concerns: Sudden increase in size of a pre-existing neck swelling, severe pain, fever, difficulty swallowing, and breathing.

Medical History: 30-year history of a multinodular goiter; had previously declined surgery. No other significant comorbidities or history of immunocompromise.

Patient Perspective: (Not explicitly obtained from the patient due to critical illness. Consent for publication was obtained from next-of-kin.)

3. Clinical Findings

On admission, the patient was febrile and tachycardic (pulse 130 bpm). Examination revealed a massive (14x12 cm), bosselated, indurated, erythematous, warm, and tender anterior neck swelling, larger on the left, with tracheal deviation to the right (Figure.1). She acutely developed stridor and profound dyspnea, requiring emergency endotracheal intubation.

4. TIMELINE

Table 1:

Day	Event
-30 years	Diagnosis of multinodular goiter.
-7 days	Onset of rapid neck swelling enlargement, pain, and fever.

Day 0	Admission to emergency department with respiratory distress. Emergency intubation. CT scan performed. Ultrasound-guided aspiration of abscess. Initiation of broad-spectrum antibiotics.
Day 0 (+6 hours)	Clinical deterioration. Death from refractory septic shock.

5. Diagnostic Assessment

Laboratory Tests: Marked leukocytosis (25,100/mm³); elevated serum creatinine (1.8 mg/dL); subclinical hyperthyroidism (TSH 0.01 IU/ml).

Imaging: Neck radiograph showed an air-fluid level and tracheal deviation (Figure.2). Contrast-Enhanced CT neck confirmed a large (6.4 x 10.5 x 10.3 cm) peripherally enhancing collection with air foci and an air-fluid level within the left thyroid lobe, extending into the mediastinum and compressing the trachea (Figure.3).

Microbiology: Culture of aspirated pus yielded monomicrobial growth of *Escherichia coli*.

6. Therapeutic Intervention

Due to hemodynamic instability precluding immediate surgery, a damage-control ultrasound-guided aspiration of 400 ml of pus was performed. Intravenous broad-spectrum antibiotics (Meropenem and Metronidazole) were administered (Figure.4).

7. Follow-Up and Outcomes

The patient's condition deteriorated rapidly post-intervention. She died from refractory septic shock six hours after admission and procedural intervention. No surgical resection was possible due to instability.



Figure 1: Anterior and left lateral views of the neck showing a large, erythematous swelling (arrow)



Figure 2: Neck radiograph showing air-fluid level and tracheal deviation to the right

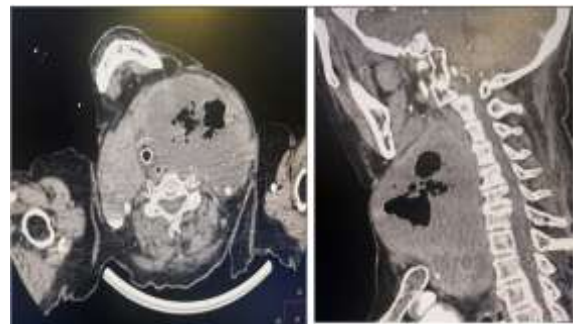


Figure 3: Axial and sagittal CT images showing a large collection with air-fluid level (star) within the left thyroid lobe, causing tracheal displacement



Figure 4: Post-aspiration view showing decompression of the neck swelling

DISCUSSION

This case underscores several critical points:

Uncommon Pathogen: *E. coli* is a rare cause of primary thyroid abscess, especially in a non-immunocompromised host without an identifiable source.

Predisposing Condition: The long-standing multinodular goiter likely created a necrotic, hypoxic environment conducive to infection by facultative anaerobes like *E. coli*.

Management Imperative: Emphysematous thyroid abscess is a surgical emergency. Definitive treatment requires prompt surgical drainage or thyroidectomy. Percutaneous aspiration, while a necessary temporizing measure in unstable patients (as in this case), is often insufficient for source control in extensive disease.

Limitations: The primary limitation is the patient's rapid demise, which prevented definitive surgical management. This outcome itself highlights the aggressive nature of this condition.

CONCLUSION

This fatal case emphasizes that emphysematous thyroid abscess, though rare, carries high mortality. A high clinical suspicion, immediate CT imaging, and early aggressive surgical intervention are paramount. E. coli should be considered a potential pathogen, and long-standing multinodular goiter is a significant risk factor.

Informed Consent: Written informed consent for publication was obtained from the patient's next-of-kin.

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