

Emergency Thyroidectomy in Infected Thyroid Cyst Due to Spontaneous Gas Forming Organisms

Rehan Masood, Samiullah, Ishtiaq Ahmed Chaudhary, Taimur and Shaumaila

ABSTRACT

We are reporting a case of a young female, who presented to emergency room with sudden increase in thyroid swelling, high fever and acute respiratory distress. Clinical diagnosis of spontaneous infection of thyroid cyst was made. Operative finding was infection of thyroid cyst with gas formation. Systemic antibiotics and operative intervention by subtotal thyroidectomy led to recovery of the patient.

Key words: Goiter. Infected thyroid cyst. Gas forming organisms.

INTRODUCTION

Acute suppurative thyroiditis, also known as infectious thyroiditis, bacterial thyroiditis or pyogenic thyroiditis is a rare condition.^{1,2} Only few cases have been reported in literature among adults and children.³ Bacterial thyroid infections are more common than fungi, parasites and mycobacteria.¹ The most common cause of thyroid gland infection is pre-existing thyroid disease or after some diagnostic or therapeutic intervention like needle aspiration.^{4,5} Infection with gas forming organisms is extremely rare.⁶ The commonest organisms responsible for the acute suppurative bacterial infection are gram-positive cocci and rarely gram-negative rods. Bacterial infections of the thyroid are life-threatening. They often have an explosive onset and prognosis depends upon prompt recognition and treatment. We are reporting a case of non-interventional spontaneous infection of thyroid cyst with gas forming organisms leading to acute respiratory obstruction and emergency thyroidectomy.

CASE REPORT

A 32-year-old female diagnosed case of simple multinodular goiter for the last 2 years presented to emergency room with sudden increase in size of goiter, high-grade fever, hoarseness of voice and respiratory distress for the last 2 days. There was no history of any intervention of the swelling in the past. On examination, she looked toxic with a pulse of 130 per minute, fever 103°F, respiratory rate of 30 breaths per minute. Oxygen saturation was 86% on 6 litres of oxygen. On local

examination, there was a large multinodular goiter with cystic enlargement on left side that was warm and tender. There were no lymph nodes palpable in neck and clinically she was euthyroid except the tachycardia, which was due to high-grade fever. Her X-ray chest raised a suspicion of cystic opacity in lower part of left side of neck causing compression of trachea (Figure 1). X-ray neck showed an extremely unusual finding of cystic opacity with air fluid level and septations in it (Figure 2).

Considering the severe respiratory distress, urgent neck exploration was planned. Neck was explored with standard thyroidectomy incision. At exploration, the left lobe of thyroid was found completely gangrenous with a large cyst in it containing blackish coloured foul smelling fluid. All the surrounding structures in neck were edematous and right lobe of thyroid had multiple normal looking nodules. An emergency sub-total thyroidectomy was performed taking great care to avoid recurrent laryngeal nerve injury. No abscess or any communication was found between surrounding structures and thyroid. Suction irrigation drains were placed in neck wound for the subsequent daily lavage.



Figure 1: X-ray chest showing a large cystic opacity in neck on left side.

Department of Surgery, Foundation University Medical College, Rawalpindi.

Correspondence: Dr. Ishtiaq Ahmed Chaudhary, Bungalow-14, Fauji Foundation Hospital, Morgah, Jhelum Road, Rawalpindi.
E-mail: surgish2000@yahoo.com

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Figure 2: X-ray neck lateral view showing air fluid level in enlarged cyst of thyroid.

Patient had a slow and steady recovery in 2 weeks time and was discharged home. Her thyroid cyst fluid culture grew no organisms and the histopathology of the gland showed acute suppurative infection.

DISCUSSION

Thyroid gland is remarkably resistant to infection in contrast to other organs of body due to its rich blood supply, rich lymphatic drainage, high glandular content of iodine, complete fibrous capsule and anatomically separated thyroid from other neck structures by fascial planes.¹ Infection of the thyroid gland is rare nowadays especially with the widespread use of antibiotics.^{1,2} The most common predisposing factor to infection of thyroid are pre-existing thyroid disease e.g., simple goiter, nodular goiter, Hashimoto's thyroiditis or thyroid carcinoma. Thyroid abscess formation after fine-needle aspiration has been reported.⁵ Immuno-suppressed patients, such as those with immuno-deficiency virus infection and acquired immuno-deficiency syndrome, as well as organ transplanted patients on pharmacological immunosuppression, are particularly at risk for infectious thyroiditis. Transmission of infection via a pyriform sinus fistula is commonest cause especially in children.^{4,7} Other causes are upper respiratory tract infection patent thyroglossal fistula, infection of retropharyngeal, lateral or parapharyngeal spaces.¹ Infection may also arise directly from pretracheal space due to esophageal perforation.⁸

Thyroid gland infection is caused by gram-positive *Streptococci* and *Staphylococcal aureus* in more than 80% of cases and are sole pathogen in over 70% of cases.^{1,8} Other bacteria, which have been reported to cause infection are *Clostridium septicum*,⁹ *Klebsiella pneumonia*,¹⁰ *Salmonella typhi*,¹¹ *E. coli*, *Haemophilus influenzae*, *Enterobacter* and *Pseudomonas aeruginosa*.^{5,12} In children, alpha and

beta-hemolytic *Streptococcus* and a variety of anaerobes are responsible for 70% of cases, while mixed pathogens are identified in over 50% of patients.^{3,4} Though, we sent cultures of the pus from the thyroid, it did not grow any organisms.

Most common symptoms and signs in 90% of patients are fever, neck pain, swelling, tenderness and local compression resulting in dysphagia and dyspnoea.^{1,7} Once the diagnosis is confirmed by ultrasound or computed tomography, parenteral antimicrobial therapy based on the culture and Gram staining must be started.¹² Gram staining and culture of the fine needle aspirate reveal the causative organisms in over 90% of cases.^{1,12} These patients need hospitalization and early surgical intervention in majority of cases. Our patient presented with fever, increase in thyroid swelling and acute respiratory obstruction. The patient had tachypnea and respiratory obstruction, so we did an emergency thyroidectomy in order to drain the abscess and relieve the compression on trachea.

Mortality from acute bacterial thyroiditis has markedly improved from 20-25% as reported in literature in early twentieth century to 8.6% as reported by Berger *et al.* after extensive review of literature in 1983.⁸ Recent studies fail to list mortality as complication of acute bacterial thyroiditis but mortality may be still higher if diagnosis is delayed and antimicrobial therapy is not instituted early.⁵ Complete recovery is a rule after successful treatment. Some patients may develop transient hypothyroidism, vocal cord paralysis and recurrence of infection.¹

Our patient had a smooth recovery and he was discharged on the 14th postoperative day.

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