THYROID ABSCESS CAUSED BY SALMONELLA GROUP C INFECTION

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Abstract Thyroid abscess is a rare disease entity. The thyroid gland is extremely resistant to acute bacterial infections, and when such an infection does occur, an underlying anomaly of the thyroid gland should be suspected. Patients who have underlying DM, immunosuppression or goiter may developed thyroid abscess or acute suppurative thyroiditis. A case of thyroid abscess caused by salmonella group C in a 55 year old female with a history of goiter is reported. The patient presented with fever, swelling and neck tenderness for two weeks. The diagnosis was based on suspicion from her medical history and physician’s examination and confirmed by soft tissue radiography of the neck, ultrasound and culture of the drained pus. No evidence of co-existing pyriform sinus tract was found during evaluation. Early diagnosis, appropriate antibiotic coverage and complete surgical drainage resulted in recovery.

Key word : thyroid abscess, salmonella group C infection, surgical drainage

Thyroid abscess is a rare disease entity, accounting for only 0.1% of surgical pathologies of the thyroid. Thyroid abscess may follow apparent subacute thyroiditis or acute suppurative thyroiditis. The most common underlying structural abnormality in suppurative thyroiditis is a pyriform sinus fistula, which can lead to thyroid abscess. DM, immunosuppression or simple goiter may also be pre-existing associated conditions in this disorder. Vocal cord paralysis is an extremely rare complication of thyroid abscess. Staphylococcus aureus is the most common organism cultured from thyroid abscesses. Other less common causative agents would include streptococci and mixed flora. Case reports of klebsiella, salmonella and eikinella corrodens that are isolated in some cases of thyroid abscess are ever rarer.

Salmonella infection may involve many organs such as the hepatobiliary

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Salmonella infection of the thyroid gland is rarely observed. The salmonella serotypes reported in such infections include: *S. enteritidis*, *S. typhimurium*, *S. choleraesuis*, *S. paratyphi A* and *S. brandenburg*. To our knowledge, there have been only 14 cases of salmonella infection of the thyroid gland in the literature prior to this case report. (Table 1) The author reports in detail one adult patient with a salmonella group C thyroid abscess.

**Case report**

A 55-year-old Thai female with a known goiter for one year presented to Nan Provincial Hospital on November 1, 2002 with a two week history of a diffusely enlarged and painful mass predominately on the left side of the neck. Her history included fever (38.5 °C), mild odynophagia, but no dysphagia or dyspnea since the onset of the neck swelling. There was no past medical history of DM, respiratory tract infection, foreign body impaction, neck irradiation, contact with tuberculosis or risk of HIV infection. On examination, a large diffuse mass occupying the region of the thyroid gland was found. The ill defined mass was tender and warm to touch, but no fluctuance was noted. (Figure 1)

The patient was admitted to the medical ward for investigation. Laboratory findings included: Hemoglobin at 8.3 gms/dL, hematocrit at 26 vol%, WBC at 20,100 with 84% of neutrophils, 15% of lymphocytes, 1% of eosinophils and adequate platelets, normal U/A, BUN at 12.6 mg/dL, creatinine at 1.13 mg/dL, FBS at 100 mg/dL, normal thyroid function tests, and electrolytes that showed hyponatremia. Soft tissue radiography of the neck, AP and lateral views, were obtained, which showed a right shift of the trachea from a prominent soft tissue shadow on the left side (AP view), as well as abnormal air anterior to the trachea that was felt to be in the mass (lateral view) (Figure 2, 3). Hemoculture and widal test were sent on the second day and treatment was started with trimethoprim (80 mg) and sulfamethoxazole (400 mg) (TMP-SMX) at 2 tablets bid daily along with analgesic drugs.

On the third day of admission, ultrasound examination of the thyroid gland revealed a well defined border of a nearly anechoic mass of about 6 X 4 X 5 cm in size in the lower pole of the left lobe of the thyroid gland, with some medial extension. Minimal floating echos were also found within the mass. These findings were noted as compatible with a thyroid abscess (Figure 4). The otolaryngologist was consulted and antibiotics were changed from TMP-SMX to cefazolin at 2 gm IV q 8 hours along with metronidazole at 500 mg IV q 8 hours. Needle aspiration was then undertaken and 4 mL of brown fluid was obtained and sent for gram stain and cultures. The gram stain showed many PMN cells without any microorganisms. Two days later, aspiration was repeated,
**Figure 1.** Diffuse enlarged, painful neck swelling prominent on the left side.

**Figure 2.** Neck X-ray AP view: soft tissue technique shows displaced trachea to the Rt side causing by a prominent soft tissue shadow on the Lt side.

**Figure 3.** Neck X-ray lateral view: soft tissue technique shows abnormal air in anterior aspect of the trachea.
but only 0.3 mL of fluid was obtained. On the 8th day of admission, direct laryngoscopy was performed to examine the fistula tract from pyriform sinus followed by definitive drainage of the abscess via a standard thyroidectomy collar incision. About 100 mL of fluid was found within the thyroid gland at surgery and a penrose drain was placed into the abscess to complete drainage. The drain was removed after 7 days when drainage was scant. Direct laryngoscopy failed once more to reveal any pyriform sinus tract.

Cultures of the fluid obtained at surgery revealed *salmonella group C*, sensitive to ampicillin, cefazolin, amikacin, gentamicin and TMP-SMX. The widal test was negative for *S. typhi O* and *S. typhi H*. Hemo-culture showed no growth on any plates. The patient developed mucous bloody diarrhea on the 9th hospital day at a frequency of 2 to 3 times per day. Stool exam and cultures of the stool were negative. The patient responded well to treatment and was discharged from the hospital. Nineteen days from original admission, the patient returned for follow up and underwent barium swallow, which again failed to demonstrate any leakage of contrast at the pyriform sinus.

**Discussion**

The differential diagnosis of a patient presenting with fever and painful neck
Salmonella thyroid abscess

swelling includes thyroiditis, specific infection of the thyroid gland (tuberculosis, fungus), thyroid abscess, infected branchial cleft cyst or sinus and secondary infection from thyroid tumor. Differentiating between these entities on a clinical basis is difficult. The ultrasound and needle aspiration with smear, cytology, and culture for microorganisms as well as fungus and acid fast bacillus are useful for diagnosis. Recurrence of acute suppurative thyroditis or thyroid abscess, especially in children, can be caused by infection through pyriform sinus fistula, which usually originate from the tip of the left pyriform sinus. They are thought to be branchial cleft anomalies. Investigations such as direct laryngoscopy, barium swallow and CT with air contrast are recommended to rule out the possibility of a sinus tract arising from the pyriform sinus once the initial infection has been treated. Secondary infection of thyroid tumor should be suspected in adults with preexisting thyroid mass, Histopathologic evaluation of the mass is useful for definite diagnosis. Treatment includes proper antimicrobial agents, surgical drainage, complete fistulectomy or thyroidectomy depending upon the pathologies.

Thyroid abscess is a rare disease entity. The thyroid gland is extremely resistant to acute bacterial infections, and when such an infection does occur, an underlying anomaly of the thyroid gland should be suspected. *Staphylococcus aureus* is the most common organism cultured from thyroid abscess. Other less common causative agents include *streptococci and mixed flora*. Case reports of *klebsiella*, *salmonella* and *eikinella Corrodens* isolated in some cases of thyroid abscess are ever rarer. Certainly, salmonella infections of the thyroid gland are rare indeed. To this author’s knowledge, there are only 14 case previous reports of salmonella thyroid infections in the world literature. The salmonella serotypes reported in such infections include: *S. enteritidis*, *S. typhimurium*, *S. choleraesuis*, *S. paratyphi A* and *S. brandenburg*. The author presents one case of salmonella group C infection causing a thyroid abscess in an otherwise healthy 55 year old female with a pre-existing small goiter. The patient presented with fever, neck swelling and tenderness for two weeks, and then developed a brief episode of mucous bloody diarrhea on the 9th hospital day, which was culture negative for salmonella. Diagnosis was based on suspicion from her medical history, physical exam and initial laboratory studies, and radiographic images utilizing soft tissue x-rays of the AP and lateral neck along with ultrasound. Diagnosis was confirmed by needle aspiration followed by open incision and drainage, and subsequent culture of the offending organism. No tract or connection of the thyroid gland with the pyriform sinus was demonstrated in subsequent evaluations. Treatment of thyroid abscess included...
early diagnosis, appropriate antibiotics and surgical drainage, which resulted in a complete recovery.

Summary

Salmonella group C causation of a thyroid abscess in a 55-year-old Thai woman was reported. Diagnosis was made by medical history, physical exam and laboratory, and radiologic investigations. No connection with the pyriform sinus was discovered. Early diagnosis, appropriate antibiotics and complete surgical drainage resulted in a complete recovery.

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References


ฟีของต่อมไทรอยด์จากการคิดเข้าซัลโมเนลล่ากลุ่มซี

วานิลล์ ศรีบุรี, ท.บ.
กลุ่มงานโรคต الرحمن โรงพยาบาลน่าน

บทคัดย่อ ฟีของต่อมไทรอยด์เป็นโรคที่พบได้ไม่บ่อย,ต่อมไทรอยด์มีความด้านมากต่อการคิดเข้าของแบคทีเรียในกลุ่มซี ดังนั้นเมื่อใดก็ตามที่มีการคิดเข้าดังกล่าวเกิดขึ้นแพทย์ผู้รักษาควรทำการหาความผิดปกติของต่อมไทรอยด์และตรวจหาความผิดปกติในต่อมไข้ประจำตัวผู้ป่วยที่มีโรคประจำตัวซึ่งบางราย, ผู้ป่วยที่มีการติดเชื้อเข้าที่ลำคอหรือคอพอกอาจเกิดเป็นฟีของต่อมไทรอยด์หรือมีต่อมไทรอยด์อักเสบแบบเฉียบพลันได้.

ผู้เขียนได้รายงานผู้ป่วยที่มีต่อมไทรอยด์จากการคิดเข้าในกลุ่มซี ซึ่งได้รับการรักษาที่กลุ่มซี ผู้ป่วยนี้อายุ 55 ปี ที่มีประวัติโรคเบาหวาน ไม่เคยรับการรักษาที่กลุ่มซี พบปัญหาในระยะเริ่มต้นซึ่งใช้ยาปฏิชีวนะเป็นเวลา 2 สัปดาห์ การวินิจฉัยโรคทางการตรวจหู, คอ, จมูกที่มีการคิดเข้าสัณฐานเฉพาะที่ลำคอ และการตรวจคอมพิวเตอร์ทางท้องปฏิบัติการ เช่น การเอกซเรย์เอ็กซ์ถ่ายวิวเด็กในลำคอ, การตรวจคอมพิวเตอร์ และการวินิจฉัยโรคลำคอ ที่ลำคอ, การวินิจฉัยโรคที่ลำคอ และการคัดกรองระบบหายใจ ทำให้เข้าใจโรคที่ลำคอและคัดกรองระบบหายใจ ทำให้ทราบโรคที่ลำคอ 2546;42(3):113-119.

คำสำคัญ: ต่อมไทรอยด์ ฟี เชื้อซัลโมเนลล่า