International Surgery Journal
Sivakumar S et al. Int Surg J. 2022 Dec;9(12):2089-2091
http://www.ijsurgery.com
pISSN 2349-3305 | eISSN 2349-2902

DOI: https://dx.doi.org/10.18203/2349-2902.isj20223180

Case Report

A rare case of neck abscess caused by *Salmonella*

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Received: 12 October 2022
Accepted: 05 November 2022

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ABSTRACT

Neck abscess is a quite common presentation among diabetic patients, but *Salmonella* causing neck abscess is very uncommon. *Salmonella*, which is the causative agent for Enteric fever, is also involved in causing systemic and local infections. We present an interesting case of a 60-year-old diabetic male, who had large neck abscess caused by *Salmonella*.

Keywords: *Salmonella*, Focal infection, Diabetes mellitus

INTRODUCTION

Salmonella, which is one of the oldest known bacteriae involved in annual outbreak of enteric fever also causes systemic infection or focal infections, like neck abscess.[1] Neck abscess is commonly caused by organisms like *Staphylococcus aureus*, *Klebsiella*, and *Pseudomonas*. Salmonella causing neck abscess is very rare, with incidence of less than 1%. But few cases have been reported in earlier studies. We present a case of neck abscess caused by *Salmonella* species.

CASE REPORT

60-year-old male, type-II diabetic and hypertensive for 15 years, presented with gradual onset of swelling in the right side of neck of 2 weeks duration. It was noticeably increasing in size. He also had pain over the swelling. He developed low grade, intermittent fever and was not showing any symptoms and signs of systemic infection. He did not manifest compressive symptoms over the neck. On routine physical examination, a 10×6 cm diffuse swelling was noted in the lateral aspect of right side of neck. It was firm in consistency, warm and tender on touch. Erythema was appreciated over and around the swelling (Figure 1). There was no discharge noticed from the swelling.

Figure 1: A large abscess with induration in the right side of neck.

Blood investigations showed leukocytosis (13.92/mm^3). His blood glucose level was in a higher range of 252 mg/dl. He tested negative for retrovirus, as an opportunistic infection may present with neck abscess.[2] Furthermore, to know the location and nature of the abscess, ultrasound of

neck done showed large thick-walled lesion in the right neck suggestive of inflammatory lesion or abscess.[3]

Under the guidance of ultrasound, pus was aspirated from the abscess and the aspirated pus tested negative for tuberculosis by GeneXpert MTB. Surprisingly, culture of the aspirated pus was reported as *Salmonella* species. In order to know the extent of abscess, a computed tomography (CT) scan of neck was done and it revealed 4.3×6.7×6.5 cm multiloculated collection in the right-side neck involving right sternocleidomastoid muscle, right parotid and submandibular gland (Figure 2). Sinus cavities, brain parenchyma, nasopharynx and oropharynx were normal. He was referred to an oto-laryngologist for direct laryngoscopy to rule out any extension into the oral cavity and oropharynx. With confirmation of the abscess not involving the oral cavity or pharynx, he was taken up for exploration of abscess.

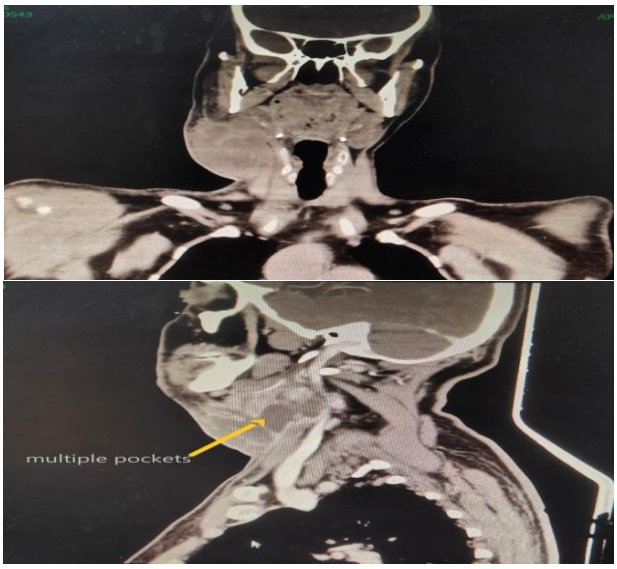

Figure 2: Localised multi-loculated abscess in the right neck, not extending to the submandibular region.

Incision was made over the most prominent and indurated area parallel to the ramus of mandible. Multiple pus pockets were found in the right lateral part of neck and under the right sternocleidomastoid muscle. Approximately 60 cc pus was drained (Figure 3). The whole abscess cavity was explored and drained. Wound was packed and left open for drainage. Intra-operatively, pus and slough were taken from the cavity and sent for culture and sensitivity, microscopic examination and Gene Xpert MTB.

Culture grew *Salmonella* species. Histopathological examination showed acute necrotising inflammation with granulation tissue. Infectious disease opinion was sought and he was started on antibiotics (sulphamethoxazole/trimethoprim and azithromycin) based on the sensitivity. His blood glucose levels were monitored frequently and kept under control with the help of oral hypoglycemic agents. On regular follow-up, wound improved with help of antibiotics, regular dressing and glycemic control. Follow-up CT neck after 6 weeks showed complete resolution of the abscess. AFB and fungal cultures were negative too.

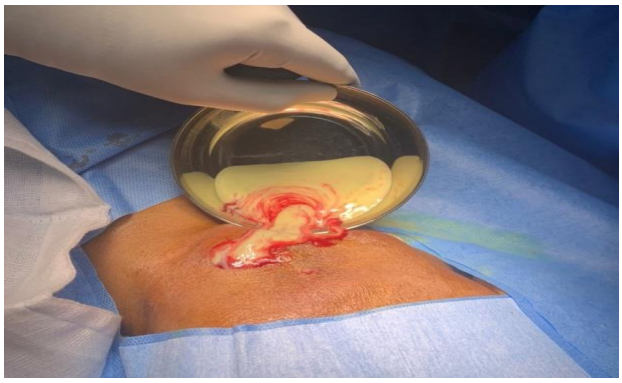

Figure 3: Abscess cavity opened. Note the consistency of the pus. Thick and mixed with blood.

Figure 4: Postoperative follow-up: minimal pus discharge noted with no evidence of remaining pus pockets and it was confirmed with CT scan.

Figure 6: Completely healed wound.

DISCUSSION

*Salmonella*is an anaerobic, non–encapsulated, motile, gram-negative bacilli, with different serotypes. The

disease caused by *Salmonella* can be classified as typhoid and non-typhoidal salmonellosis. Non typhoidal salmonellosis can range from mild gastroenteritis to severe septicemia. Among these, gastrointestinal infection is considered as the most common disease. But also very rarely, it can cause abscess in the neck especially in immunocompromised patient and diabetes.[4] This organism lives inside animals such as cattle and reptiles, which are considered to be the reservoirs of salmonella and human being as hosts.[5] Slowly it enters the alimentary tract of the host after ingestion of contaminated food. Once the bacteria get absorbed by the intestine, it directly enters the systemic circulation causing typhoid fever, gastroenteritis. Furthermore, it will end up lodging into the soft tissues through haematogenous route leading to focal infection. An example of such focal infection is neck abscess. Usually, focal infection is associated with systemic contamination. But in our case, there was no significant history suggestive of exposure to typhoid. He neither had typhoid fever before nor had been a carrier. While at the time of presentation, there was no evidence of septicaemia. Moreover, other than diabetes, he did not have any other risk factors for salmonella infection. Diabetes mellitus influences the gastric acidity and the transit time of food.[6] By reducing the gastric acidity level and the transit time concurrently, diabetes makes the environment favourable for harbouring *Salmonella.*

In 2019, McLeod reported a case of non-typhoidal *Salmonella* neck abscess in an 18-year-old boy with diabetic ketoacidosis. Microbiological tests showed growth of non-typhoidal *Salmonella* colonies. He was treated with insulin for uncontrolled diabetes and antibiotics.[7]

Pastagia et al in 2013 described two interesting cases of salmonella neck abscess. In his study, both of his patients had different types of abscesses. One with pyomyositis of sternocleidomastoid and the other with parapharyngeal space abscess. Both had contracted salmonella infection in the absence of septicaemia. They were not carriers. The only risk factor they had in common between them was diabetes.[8]

Behera et al published a case of recurrent salmonella neck abscess in a 22-year-old male. He was operated for the abscess. And the organism isolated from the pus was identified as *Salmonella paratyphi*. Antibiotics were started according to the sensitivity for a duration of three weeks. After a period of a month, he again developed abscess at the same site for which drainage was done.[9] Recurrence can also happen even after the drainage of abscess hence the patient must be encouraged to be in regular follow-up with the treating medical practitioner.

CONCLUSION

Salmonella species is not an uncommon cause of neck abscess. Samples (pus/tissue) should be routinely sent for microbiological analysis to ascertain the aetiology in patients with neck abscess. Whenever a neck abscess is encountered in patients with diabetes mellitus and immunosuppression, surgical drainage must be performed irrespective of the cause in order to prevent the development of systemic infection.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

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Cite this article as: Sivakumar S, Rangarajan V, Manikesi M, Nambi S. A rare case of neck abscess caused by *Salmonella*. Int Surg J 2022;9:2089-91.