

# Salmonella Typhi Rib Osteomyelitis with Abscess Mimicking a 'Cold Abscess'

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## ABSTRACT

*Salmonella enterica serovar typhi* (*Salmonella typhi*) causing typhoid fever is common in many parts of the world particularly in developing countries. Extra-intestinal manifestations such as osteomyelitis are rare in immunocompetent individuals. We report a case of *Salmonella typhi* osteomyelitis of a rib with overlying abscess mimicking a 'cold abscess', treatment outcomes and discuss relevant literature.

**Key words:** Cold abscess, Osteomyelitis, *Salmonella enterica serovar typhi*

## INTRODUCTION

Typhoid fever caused by *Salmonella typhi* is endemic in many developing countries, most commonly presenting as undifferentiated febrile illness with bacteremia. Gastrointestinal symptoms are present only in a minority. *Salmonella typhi* bacteremia may be associated with extraintestinal disease involving the liver, spleen, lymph nodes, skin, bones, joints, endocardium, or central nervous system.<sup>[1]</sup> Osteomyelitis or abscess occurs in less than 1% of all cases caused by *Salmonella typhi*.<sup>[2]</sup> Osteomyelitis usually involves the vertebra in adults and the long bones in children. We report a case with isolated *Salmonella typhi* osteomyelitis of a rib with an abscess mimicking a 'cold abscess' without bacteremia.

## CASE REPORT

A 39-year-old Indian woman presented with swelling and pain in the left side of the back since one month associated with low grade fever on and off for the last two weeks. She also complained of minimal weight loss. There were no significant co-morbid illnesses except for mild hypertension for few years. The patient did not appear toxic and was

hemodynamically stable. There was a 6 × 8 cm sized globular swelling in the left infra-scapular region with no signs of inflammation. There was minimal tenderness over the adjoining sixth rib. Her white blood cell count was 17,500/mm<sup>3</sup> (neutrophils 74%, lymphocytes 18%, monocytes 7%, eosinophils 1%); bilirubin - total 0.8 mg/dl and direct 0.2 mg/dl; aspartate aminotransferase 50 U/L; alanine aminotransferase 44 U/L; alkaline phosphatase, 175 U/L; erythrocyte sedimentation rate of 96 mm/h and glycosylated hemoglobin (HbA1C) of 6.8%. Computed tomography (CT) of the thoracic region revealed a lytic lesion involving the posterior aspect of the left sixth rib with a collection measuring twelve by seven by two cm in the left paraspinal muscles [Figure 1]. Percutaneous aspiration and culture of the abscess grew *Salmonella typhi* which was susceptible to ampicillin, chloramphenicol, ciprofloxacin, cotrimoxazole and ceftriaxone but resistant to nalidixic acid. Mycobacterial cultures subsequently did not yield any growth. The left sixth rib was surgically excised with drainage of the abscess. The patient was treated successfully with gatifloxacin at a dose of 10 mg/kg/day for six weeks. The patient did well and continued to be asymptomatic one year later on follow-up.

## DISCUSSION

Osteomyelitis occurs in around 0.8% of all *Salmonella* infections.<sup>[3]</sup> The common sites that are involved are the metaphyses of long bones like the humerus and femur<sup>[3]</sup>

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**Figure 1:** Computed tomography scan of the thoracic region. Lytic lesion involving the posterior aspect of the left sixth rib with a collection around it

and the vertebral bodies.<sup>[4]</sup> Less common sites are the ulna, radius, cranium, sternum, and ribs. There are six reported cases of *Salmonella* osteomyelitis of the ribs in the literature so far. One of them presented as a chest wall tumor. All were successfully treated with a combination of antibiotics and surgical resection of the ribs. *Salmonella* osteomyelitis is commonly associated with sickle cell disease, chemotherapy, malignancies, diabetes mellitus, liver disease, extremes of age and steroid therapy. Osteomyelitis in immunocompetent individuals is rare. Blood cultures are positive in around 71% of patients with *salmonella* osteomyelitis. An aggressive approach is necessary with surgical debridement along with administration of appropriate antibiotics to which the organism is sensitive for a duration of at least six weeks.<sup>[5]</sup> In developing countries where tuberculosis is common, a cold abscess is often a presenting feature of tuberculosis of the spine. Smear for acid fast bacilli is positive only in around 20-40% of cases and empiric therapy while awaiting mycobacterial cultures is common practice in endemic regions. This case also illustrates the importance of doing bacterial cultures on the aspirated pus in order to rule out organisms like *Salmonella* before starting the patient on empiric anti-tuberculosis therapy.

*Salmonella typhi* isolates with decreasing susceptibility to ciprofloxacin and resistant strains poses a new challenge for the clinicians in many parts of Asia resulting in treatment failures and poorer outcome. In a recent study from India with 337 blood culture isolates of *Salmonella typhi*, 78% were nalidixic acid resistant, a surrogate marker for poor response with ciprofloxacin, and 8% ciprofloxacin resistant strains. Isolates with reduced susceptibility to ciprofloxacin possessed single mutations in the *gyrA* gene.<sup>[6]</sup> The treatment options available for infection caused by nalidixic acid resistant *Salmonella typhi* are azithromycin, 3<sup>rd</sup> generation cephalosporin and fourth generation fluoroquinolones like gatifloxacin or moxifloxacin. Our patient was successfully treated with gatifloxacin.

## CONCLUSION

Although rare, rib osteomyelitis with surrounding abscess mimicking 'cold abscess' should be recognized as a manifestation of typhoid fever, especially in typhoid and tuberculosis endemic countries such as those in South Asia.

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