

Salmonella Osteomyelitis of the Rib

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(Submitted August 11, 1997. Accepted for publication January 20, 1998)

Scand Cardiovasc J 32; 181–182, 1998

Salmonella rib osteomyelitis is extremely rare; we found only one previously reported case. A 33-year-old man presenting with a discharging sternal sinus was diagnosed by means of computed tomography and bone isotope scans and confirmed by excision of the affected portion of the rib. The operation was curative.

Key words: chest wall tumour, computed tomography, osteomyelitis, thoracic surgery.

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Although osteomyelitis is a common disease (1–3), osteomyelitis of the ribs is very rare. In the literature we found only one case report (4) of salmonella infection causing rib osteomyelitis. We now add a second case.

CASE REPORT

A 33-year-old man presented in June 1993 with a discharging sinus in the anterior chest wall below the manubrium. The sinus had appeared spontaneously, 3 weeks previously, from a soft-tissue swelling of one month's duration, in association with high temperature (38–40°C) and local pain. Cultures were reported to be negative. His past medical history was uneventful. Physical findings on admission were unremarkable except for slight pyrexia (37.5°C) and palpable left axillary lymph nodes. Chest radiographs were normal. Computed tomography (CT) scan of the chest (Fig. 1)

revealed a lytic lesion in the anterior portion of the second left rib. The rib itself appeared expanded and destroyed. A bone isotope scan (Fig. 2) showed increased uptake in the affected rib. New cultures were negative, as was investigation for sickle cell anaemia.

Exploration of the sinus was performed under general anaesthesia and revealed beneath the pectoralis major a collection of thick yellowish pus. Draining this pus disclosed a cavity in the second left rib. A portion of the rib within macroscopically healthy margins was resected. Bacteriologic cultures and cytologic smears were taken, and the excised rib was sent for histologic examination. Cultures grew *Salmonella* group D and histology showed cavitating osteomyelitis. The patient received appropriate antibiotic therapy and left hospital after two weeks. Four years later he is well and has had no recurrence.

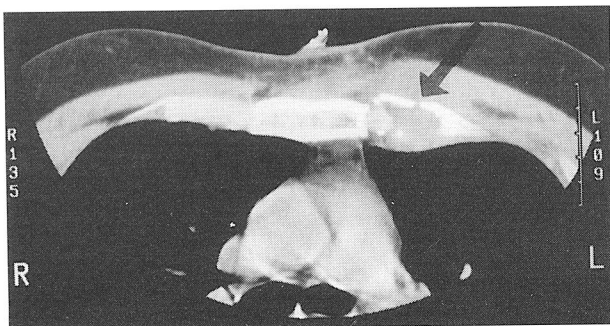


Fig. 1. Chest CT scan demonstrating the excavated rib (arrow).

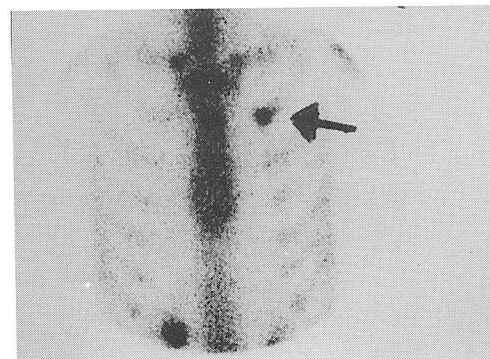


Fig. 2. Increased rib uptake in isotope bone scan (arrow).

CONCLUSIONS

Rib osteomyelitis, though rare, is more common in children than in adults (1–3). *Salmonella* is the causal microorganism in less than 1% of all cases of osteomyelitis (3, 4). Among 63 reported cases of salmonella osteomyelitis (5), none involved the ribs. A review of 163 osteomyelitis cases in a 15-year period found only one case (0.6%) affecting the ribs; salmonella was not the inducing microorganism. The first report of rib osteomyelitis caused by salmonella was published in 1994 by Ishiwa et al. (4).

For classification of salmonella infections according to symptoms, four categories were proposed (6): (a) acute gastroenteritis, as in food poisoning; (b) enteric fever of typhoid or paratyphoid type, (c) septicaemia or localized infection such as abscess, meningitis, appendicitis or osteomyelitis, and (d) carrier status. Our case was in the third category.

Osteomyelitis of the ribs has been found in association with sickle cell anaemia (3, 4), childhood empyema (7, 8) and infections with *Aspergillus* (9), *Staphylococcus aureus*, *Klebsiella* sp, *Streptococcus*, *Proteus rettgeri*, *Pseudomonas aeruginosa* and *Salmonella* (2). Rib osteomyelitis was reported close to sites of chest intubation in children with empyema (8). Blunt chest trauma and rib fracture can lead to osteomyelitis in the presence of infection and compromised blood supply. Septicaemia and haemoglobinopathies are regarded as causes of rib osteomyelitis, but are rare (5).

Rib osteomyelitis in most cases presents with a swelling in the chest wall or a chronic discharging sinus (2), as in our patient. The diagnosis can be confirmed radiologically. Plain chest films may show the costal expansion and destruction, patchy necrosis, and extra-pleural swelling of soft tissues (3), but these were normal in our patient. CT scan is more helpful, since it demonstrates the rib erosion, the fluid collection adjacent to the bone, and the extension of the abscess into the medullary cavity of the rib. Radiologists suggest (10) that oedema around a rib should be considered to represent osteomyelitis until proven

otherwise. Gallium isotope scanning is helpful in demonstrating the rib lesion. Differential diagnosis should include inflammatory tumour, malignant lymphoma or chest wall tumour (4). Resection of the affected rib portion offers the best outlook for cure of salmonella rib osteomyelitis (2–4, 11).

ACKNOWLEDGEMENT

The authors express their thanks to Professor Akihito Matsumoto (Yokohama, Japan) for kindly providing information by personal communication.

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