CASE REPORTS

SALMONELLA ENTERITIDIS - AN ATYPICAL PRESENTATION

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Abstract

We describe a case of a *Salmonella enteritidis* soft tissue infection, with cartilagineous involvement of the sternum in an immunocompetent young infant.

Introduction

Salmonella enteritidis is primarily a self-limited intestinal infection. However focal extra-intestinal syndromes have been increasingly reported since the early 1980s. (1,2) The most common manifestations are osteomyelitis or meningitis, usually with bacteraemia, after gastrointestinal symptoms. Salmonella soft tissue infection is rare, and occurs more frequently in adult immunocompromised hosts. (1,3) We describe a case of a *Salmonella enteritidis* soft tissue infection, with cartilagineous involvement of the sternum in an immunocompetent young infant.

Case Report

A 2 months-old infant, previously healthy, was admitted for high fever, poor feeding and irritability with 12 hour evolution. The child was breast and bottlefeeding and a prior history of a self-limited episode of diarrhoea 15 days earlier was also reported. There was no history of travel or exposure to pets. On admission, she appeared ill, irritable, had normal anterior fontanel, impaired peripheral perfusion but was hemodynamical stable and had no localizing signs of infection on physical examination. Her vital signs were: temperature 39.5oC, blood pressure 95/60 mmHg and pulse rate 148 beats per min. The abnormal laboratory findings included white blood cell count of 8,300 cells/cumm, absolute neutrophil count 6947/cumm and C-reactive protein of 13.18 mg/dl. Hemostasis, cerebrospinal fluid analysis and urinalysis were normal. Based on clinical presentation and initial laboratory results, the child was hospitalized with clinical diagnosis of occult bacteraemia. Intravenous ceftriaxone (100 mg/kg/once a day) and ampicillin (100 mg/kg/day every 6 hours) were prescribed. On the third day after admission, a round cutaneous lesion (4x4 cm) over the xyphoid process of the sternum was noted. This lesion was painful and local signs of inflammation were present. Ultrasound examination revealed a hypoechoic lesion over the anterior wall of the sternum that was 30X30 mm in size. Chest CT scan confirmed an abscess formation without bone involvement. Flucloxacillin was substituted for ampicillin, due to a concern for staphylococcal disease. Incision and drainage was performed on the sixth day. A 4 cc purulent exudates was aspirated and, macroscopically, irregularity of the anterior cartilagineous wall of the sternum was seen. *Salmonella enteritidis* susceptible to ampicillin and ceftriaxone was isolated from the exudates as well as from the initial blood culture. Technetium bone scan was performed and no evidence of osteomyelitis was found. Hemoglobin electrophoresis showed absence of HbS. Serum IgG (658 mg/dl), IgM (44.0 mg/dl), IgA (52.1 mg/dl), IgG1 (639.0 mg/dl), IgG2 (107 mg/dl), IgG3 (80.0 mg/dl), IgG4 (15 mg/dl), complement C3 fraction (97.10 mg/dl), complement C4 fraction (12.8 mg/dl), CH100 activity (520 U/ml), lymphocyte count (5200 cells/cumm) CD19 (15%) CD4 (39.9%), CD8 (21.0%) were normal. Oxidative function of neutrophils (266.7) and phagocyte function of neutrophils (95.9%) were also normal. After the Salmonella isolation, a cultural sample of the faeces was performed from the patient and from her parents and sister which were negative.

The child was discharged on the eighteenth day on oral amoxicillin which was given for a total of six weeks. Six months later she was symptom free with no evidence of recurrence.

Discussion

In our review from the literature we did not find any chest wall abcess caused by *Salmonella enteritidis* in an immunocompetent infant. A similar abscess due to *Salmonella enteritidis* was reported by Minohara et al (3) in a healthy 6 year old boy and by Gupta et al (1) in a healthy adult. The incidence of salmonella infection is greatest among children younger than 5 years of age, with a peak incidence among those younger than one year. (2) Infants and elderly population tend to have more severe infections. (4)

Salmonellosis in children may manifest as acute or chronic asymptomatic infection (carrier state). Symptomatic infections include gastroenteritis, enteric fever and bacteraemia, with or without focal suppuration. (5) Aproximately 5% of individuals with gastrointestinal symptoms caused by nontyphoidal salmonella will develop bacteraemia (4), but Hyams et al (6) did not find clinical and laboratory data to predict which patients were more likely to have bacteraemia on initial presentation.

In general population, focal suppurative extra-intestinal complications occur in 10% of the bacteraemia cases. (7) They can occur in any localization, but the most common sites are the bones and the meninges. (2) Salmonella abscesses are rare and occur most frequent in the proximity of the gastrointestinal tract (3). Associated risk factors for developing extra-intestinal salmonella infection are: age less than 3 months, anterior gastrointestinal surgery, an immunocompromised condition, sickle cell disease and severe malnutrition. (8,9)

In the present case, *Salmonella enteritidis* was isolated from blood and pus, confirming a systemic infection distant from the gastrointestinal tract. The only risk factor identified in the infant was her age.

Transmission of salmonella to a susceptible host usually occurs by consumption of contaminated products, however Sramova et al (10) described sporadic cases in children under 2 years of age, where direct and indirect contact may have participated in the transmission of the infection. Our child was both on breast and botttlefeeding, and neither of her family members had salmonella in the cultural

examination of the feces. Although a self limited episode of diarrhea has been described 15 days prior to her hospital admission, we could not confirm the possible source of infection. As most focal extra-intestinal infections described in the literature have a prior intestinal infection (1), we can speculate that the infant episode of diarrhea was the initial focus of infection. We think that a sub-clinical abscess of the sterna region soft tissues could have been present ab initio preventing antibiotics from reaching it due to hypoperfusion of cartilagenous tissue. That fact could explain the subsequent worsening of local infection, in spite of prompt initiation of antibiotics to which the agent was susceptible. We also believe that these facts (hypoperfusion and adequate therapy) prevented involvement of the sternum bone.

This patient had a *Salmonella* extraintestinal localized cartilagineous infection and was treated with a narrow spectrum antibiotic to which the identified strain was susceptible. The fact that patient had an abscess justified a six week duration of therapy, as recommended in the literature. (5,8,9)

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