Gas-Forming Parotid Abscess in a Diabetic Patient: An Unusual Complication of *Salmonella enteritidis* Bacteremia

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ABSTRACT: Parotid abscess, not only a focal infection but also a sequela of systemic infection, necessitates the detailed search for the underlying pathogens. A 76-year-old diabetic male visited the emergency room of a hospital because of intermittently low-grade fever and a painful lump in the right parotid gland region for 7 days. Progressive painful swelling of the gland with the signs of severe sepsis developed 3 days later. Computed tomography of the neck revealed a cavitary lesion with an air-fluid level in the right parotid space. Superficial parotidectomy was performed. *Salmonella enteritidis* was isolated from both the pus and the blood culture. After a 2-week course of intravenous ampicillin and an additional 2-week course of oral moxifloxacin, he was free from recurrence at a 6-month follow-up. This case highlights that an initially nontoxic parotitis may be the presenting feature of extraintestinal salmonellosis. Early diagnosis and treatment are important to prevent lethal dissemination in high-risk groups. **KEY INDEXING TERMS:** *Salmonella*; Parotid abscess; Diabetes mellitus. **[Am J Med Sci 2008;336(6):504–507.]**

Parotid is the salivary gland most commonly affected by an inflammatory process. Etiology of parotitis includes pure viral or bacterial infection, autoimmune inflammation, or a combination, which presents a serious diagnostic challenge for clinicians. Parotid abscess, commonly bacterial, is an unusual complication of suppurative infection of the parotid gland. Ductal ectasis, primary parenchymal involvement, or infection of the subcapsular lymph nodes may result in abscess formation.[1] The most common pathogens associated with acute bacterial parotitis are *Staphylococcus aureus* and anaerobic bacteria. Other common pathogens reported in the literature are *Streptococcus* species (including *Streptococcus pneumoniae*) and Gram-negative bacilli (including *Escherichia coli*).[2]

Salmonella, including typhoid and nontyphoid, is a common foodborne infection in healthy individuals. *Salmonella typhi* and *paratyphi* cause enteric fever in endemic areas of the world. Nontyphoidal *Salmonella* species produce human infections in the developed world, presenting with bacteremia and focal infection.[1–5] Extraintestinal manifestation of salmonellosis is seldom the cause of acute suppurative parotitis or parotid abscess. Herein, we describe a diabetic patient with parotid abscess formation as the presentation of *Salmonella enteritidis* bacteremia.

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Case Report

A 76-year-old man visited the emergency room of a hospital because of right face swelling and intermittent low-grade fever for 7 days. He has history of type 2 diabetes mellitus for 10 years. His blood glucose level was not controlled well because of poor compliance to oral hypoglycemic agents. He denied symptoms of diarrhea, vomiting, abdominal pain, or joint pain in the past 1 month. Exposure to pets and contact with ill patients were also denied. Physical examination showed a nontoxic appearance, low-grade fever, and a painful lump that measured 4 × 4 cm in the right parotid gland region. Laboratory studies showed the following values: a leukocyte count of 11,500/μL with 77% neutrophils; a platelet count of 195,000/μL; blood glucose 488 mg/dL; C-reactive protein 6.14 mg/dL (normal range <0.5 mg/dL); and hemoglobin A1c 11%. His urine and stool tests were normal. Chest radiography disclosed no focal opacities. Acute viral parotitis was diagnosed initially. Blood culture was obtained. Supportive care was taken.

Three days later, he was admitted because of severe sepsis. Chills, high fever, tachycardia, and hypotension developed. Severe tenderness and progressively warm, indurated, erythematous swelling in the right parotid gland (6 × 6 cm) were found. Trismus also developed. Contrast-enhanced computed tomography of the neck revealed a cavitary lesion with air-fluid level in the right parotid space, indicating abscess formation (Figure 1A). Several enhancing nodules were also shown in the anterior aspect

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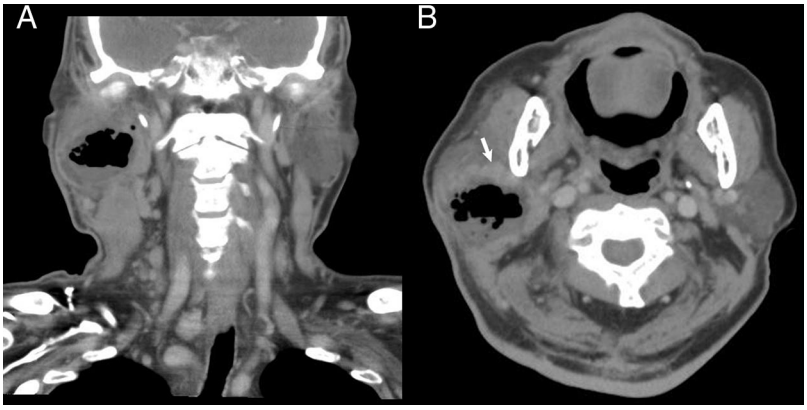

Figure 1. Contrast-enhanced computed tomography of neck revealed an abscess formation with air-fluid level in the right parotid space (A) and several enhancing nodules in the anterior aspect of the superficial lobe of the right parotid gland (B); the pathology of the nodules demonstrated a Warthin tumor.

of the superficial lobe of the right parotid gland (Figure 1B). *S. enteritidis* was isolated from the blood culture, which was susceptible to ampicillin and moxifloxacin. In addition to fluid replacement, 2 g of ampicillin was administrated intravenously every 6 hours. We performed superficial parotidectomy of the right parotid abscess. Pathology of the parotid gland revealed acute necrotizing inflammation. The nodules found by computed tomography were confirmed as a Warthin tumor by pathology.

A pus culture also showed *S. enteritidis*. Fever subsided after surgery and antibiotic administration. Abdominal ultrasonography and echocardiography did not disclose involvement of other extraintestinal organs. The antihuman immunodeficiency virus antibody and antinuclear antibody were negative. The patient was discharged from our ward with complete remission of symptoms after treatment with intravenous ampicillin for 2 weeks. Thereafter, treatment for another 2 weeks with oral moxifloxacin 400 mg per day was prescribed. The patient was free from recurrence of the disease at 6-month follow-up.

Discussion

We present a case of parotid abscess as the initial feature of extraintestinal salmonellosis mimicking acute viral parotitis. Suppurative process of the parotid gland is often confused with acute viral parotitis. In patients with defective cell-mediated immunity, the clinical presentation may be atypical and nontoxic. The classic fluctuance of a parotid abscess may be obscured by the thick parotid fascia or by its location in the deep lobe.[3] Contrast-enhanced computed tomography, allowing for the detection of air and liquefied pus content of the parotid abscess, should be performed early for those with high risks.

In addition to the present case, we identified 10 more cases with parotitis or parotid abscess caused by *Salmonella* species in a Medline search of the literature[4–13] (Table 1). All patients were male. The mean age was 58 years (range, 15–79 years). Nontyphoidal *Salmonella* was isolated in 10 patients, all of them with a unilateral lesion. On the other hand, 1 patient with *Salmonella typhi* infection presented with bilateral parotitis.[4] Air production, indicating a possible concurrent anaerobic infection, was only found in 2 patients with *S. enteritidis* infection. The preceding exposure was only identified in 3 patients (2 with enterocolitis and 1 with enteric fever). Six patients had an immunocompromised state, including acute promyelocytic leukemia, immunosuppressive therapy, human immunodeficiency virus infection, poorly controlled diabetes mellitus, and chronic alcohol abuse. Dissemination, defining as bacteremia or other focal infections, was noted in 3 patients. Anatomic factors were identified in 8 patients, including Warthin tumor, previous bacterial parotitis, trauma, Stensen duct occlusion, CD8 lymphocytosis syndrome, and basal cell adenoma. Nine patients underwent surgical intervention (parotidectomy in 4 patients). Patients with adequate pus drainage and antibiotic treatment had good prognosis. Only a chronic alcohol abuse patient with multiple organ involvement died of delayed diagnosis and treatment.[12] We also found another patient in a case series who presented with bilateral parotid infection caused by *Salmonella typhi* after a facial trauma. However, detailed data were not available.[14]

Bacterial parotitis develops chiefly through an ascending infection from the mouth, especially in patients with dehydration, malnutrition, immunosuppression, neoplasm of oral cavity, tracheostomy, sialectasis, ductal obstruction, and medications that suppress salivary flow.[2] However, transient bacteremia has been recognized as another mode for organisms spreading. *Salmonella* species, especially the nontyphoidal, are prone to disseminate hematogenously, especially in neonates, infants, aged, and immunocompromised. The most common compromised conditions in adults with systemic *Salmonella* infection are cancer, diabetes mellitus, human immunodeficiency virus infection, and use of immunosuppressive drug.[13] Extraintestinal salmonellosis, including suppurative degeneration of the parotid gland, tends to occur in injured or damaged tissues or in sites of malignancy.[14] It may manifest without or many years after previous exposure. Heart or arterial infection, osteomyelitis, arthritis, meningitis, splenic abscess, ovary abscess, and soft-tissue infection have been reported.[15]

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