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CASE REPORT

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Two cases of cervical abscess in rheumatoid arthritis patients

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Abstract The prognosis of rheumatoid arthritis (RA) has recently been improved, resulting in longer survival of patients. The incidence of oral diseases increases with age, particularly for periodontal disease and those involving tooth decay, even in normal healthy individuals. Patients with RA display increased incidence of oral diseases, and the use of steroids or methotrexate to treat RA increases susceptibility to infections, sometimes causing serious infections. We present here two cases of cervical abscesses in RA patients who underwent emergency surgery to treat oral infections due to the possibility of mediastinal inflammation.

Key words Abscess · Elderly patient · Intraoral infection · Opportunistic infection · Rheumatoid arthritis (RA)

Introduction

Even in normal healthy individuals, the incidence of oral diseases increases with age, particularly for periodontal diseases and those related to tooth decay. In addition, bacteremia can often occur after tooth extraction performed to treat oral diseases.

The prognosis of rheumatoid arthritis (RA) has improved with recent advances in treatment strategies. Therefore, as the survival rate of patients with RA has been improved, RA patients experience greater risk of developing oral diseases. Infections in RA patients are often severe due to the concomitant use of steroids and immunodepressants, such as methotrexate (MTX), or monoclonal antibodies, such as infliximab, which specifically inhibits TNF-α. Elderly RA patients who develop tooth decay or undergo tooth extraction may therefore experience complications that are unlikely in healthy elderly patients. We present here two cases of cervical abscess in RA patients. One patient displayed infection of the tooth circumference, while the other underwent tooth extraction. Cervical abscesses were revealed on computed tomography (CT) and magnetic resonance imaging (MRI). As spread of the infection was considered highly likely to induce mediastinitis, emergency surgery was performed to treat the cervical abscesses.

A search of the literature revealed one similar report involving retropharyngeal abscess in a patient with RA.[1] These two cases were thus considered rare.

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Case reports

Case 1

Table 1 shows the patient profile. Onset of RA occurred when the patient was 25 years old, and the patient had been treated at our clinic using prednisolone, bucillamine, and D-penicillamine from the age of 55 years. Pain developed in the right jaw in August 1998, and temporomandibular arthrosis was diagnosed. Although dosage of prednisolone was increased to 30 mg/day, pain was unimproved. Fever and disturbance of consciousness were observed 1 month after development of pain in the right mandible, and the patient was hospitalized.

On admission, the patient was febrile (39.1°C) and displayed general malaise and disturbance of consciousness. Opening the mouth caused headaches, and slight trismus was apparent. Physical examination revealed flare and swelling of the right subaural region over the submandibular area. She also displayed right periodontitis and a de-

Table 1. Patient profiles

Case	Sex	Age (years)	After onset of RA diagnosis (years)	On admission		Time after oral cavity event	Treatment of RA	Prophlogistic bacteria
				WBC (/μl)	CRP (mg/dl)			
1	F	61	35	22730	26.6	1 month	Prednisolone 8 mg/day, bucillamine 50 mg/day, D-penicillamine 200 mg/day, tiopronin 100 mg/day	*Pseudomonas aeruginosa*
2	F	62	15	11970	46	1 month	Prednisolone 7.5 mg/day, bucillamine 200 mg/day, methotrexate 8 mg/week	*Klebsiella pneumoniae*

Profiles of cases 1 and 2, results of tests conducted at the time of admission, drugs administered, and causal bacteria
RA, rheumatoid arthritis; WBC, white blood cells; CRP, C-reactive protein

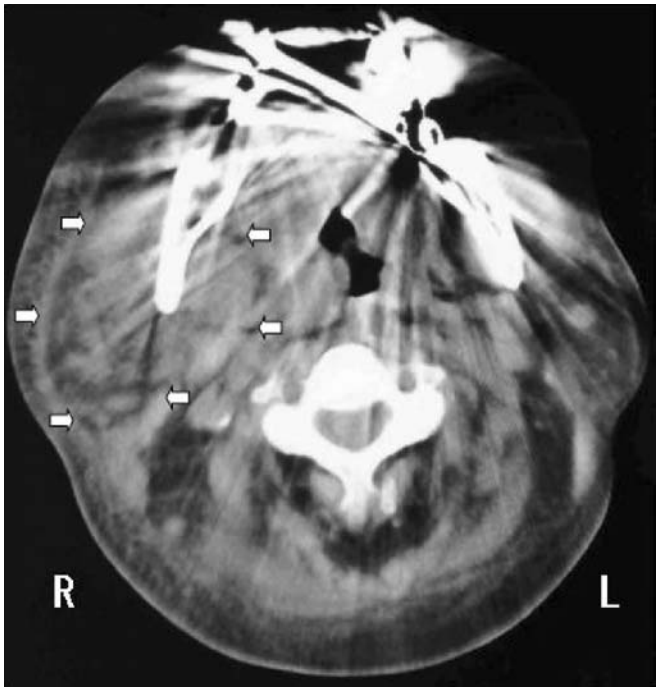

Fig. 1. Cranial computed tomography. Abscess formation is visible subcutaneously in the right mandibular region over the parapharyngeal crevice (the *arrow*s show abscess)

cayed mandibular right molar. Computed tomography revealed an abscess extending from the right subaural and submandibular region to the neck, and confirmed spread of inflammation to the parapharyngeal crevice (Fig. 1). As these findings indicated that treatment with antibacterial agents alone might not improve conditions and inflammation might spread to the mediastinum, surgery was performed to remove the lesion. Methotrexate and prednisolone administration was stopped and prednisolone was reintroduced at 5.0 mg/day about 1 month postoperatively. The operative method involved an extensive U-shaped incision in the submandibular skin, followed by drainage and debridement. The operative site was left open for approximately 1 month and treated using antibacterial agents under observation. The patient was discharged 2 months postoperatively. The causal bacterium was identified in culture as *Pseudomonas aeruginosa*.

Case 2

Table 1 shows the patient profile. For 5 years, the patient had been receiving RA treatment comprising prednisolone, MTX, and bucillamine. In June 2003, the patient developed pain in the right lower jaw and buccal swelling following extraction of the mandibular right first molar. Symptoms improved temporarily after a 3-day course of antibiotics prescribed by the dentist. However, 3 weeks after tooth extraction, she developed general malaise, trismus, and mandibular pain. On admission to this hospital, she displayed marked swelling and heat of the right neck, and was unable to eat due to trismus.

Treatment with sultamicillin tosilate 6.0 g/day did not improve symptoms. Magnetic resonance imaging performed 4 days after admission revealed inflammation of a cervical abscess that spread to the parapharyngeal crevice (Fig. 2). Due to the possibility of inflammation spreading to the mediastinum, emergency surgery was performed to remove the abscess. Drainage was performed for a short time with concomitant administration of antibiotics. The patient was discharged about 2 months postoperatively. The causal bacterium was identified as *Klebsiella pneumoniae*.

Discussion

Patients with RA often experience difficulties with maintaining adequate oral hygiene, due to joint disorders of the hand. Some RA patients also have Sjögren's syndrome.[2] Consequently, RA patients often display latent oral infections such as decayed teeth and periodontitis. Factors involved in many of these oral cavity infections may include steroid use, degradation of motor ability, and the effect of reduced mobility resulting from arthralgia in preventing patients from readily attending dental hospitals.

In addition, bacteremia after tooth extraction often occurs even in normal healthy individuals. The probability of complications involving severe infectious disease after

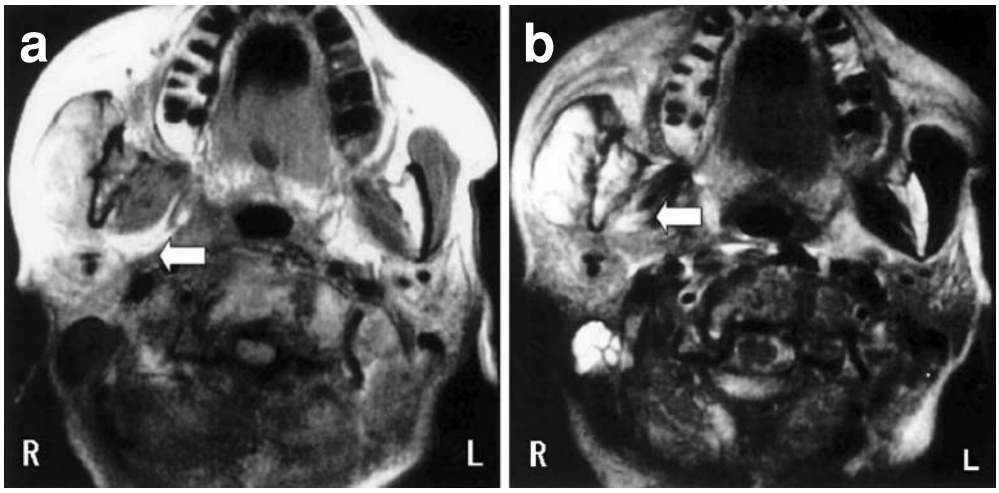

Fig. 2a,b. Cranial magnetic resonance imaging. **a** T1-weighted imaging. **b** Fat-suppressed T2-weighted imaging. Swelling and abscess formation are visible in the right masseter region (*arrow*). Both images show the right maxillary gingiva. Inflammation has spread to the parapharyngeal crevice

tooth extraction may thus be much higher for RA patients than for healthy individuals of a similar age, as the long-term use of immunosuppressants can promote the expansion of infections.

In case 1, although the patient had no history of tooth extraction, we believe that inflammation from an oral infection spread, resulting in buccal abscess. In case 2, antibiotics were given to the patient for 3 days immediately after tooth extraction. In normal subjects, symptoms such as mandibular pain and buccal swelling can typically be treated using antibiotics alone without complications.

Cervical abscess is closely associated with oral organs, particularly the teeth.[3,4] We therefore recommend pre- and postoperative administration of antibacterial agents for RA patients undergoing tooth extraction.[5] Early diagnosis of abscess development is important, as is the maintenance of good oral hygiene, for example by gargling with disinfectants.

Although MRI,[6] CT,[7] and echography[8] represent useful techniques for diagnosis of cervical abscess, patient interviews are indispensable.[9] Abscesses localized in the neck can be treated using incision and drainage plus administration of antibacterial agents.[10] However, surgical treatment is often also required.[11]

The present cases displayed characteristic formation of cervical abscess late in the clinical course. Abscess inflammation was confirmed to have spread from the cervical region to the parapharyngeal crevice. As the physical barrier between the parapharyngeal crevice and mediastinum is insubstantial, inflammation of the parapharyngeal crevice can easily spread to the mediastinum. In such cases, necrotic mediastinitis can develop, resulting in death in many cases. Oral infections represent the major primary source of necrotic mediastinitis,[12] but inflammation rarely spreads directly from the teeth.[13] Spread of inflammation to the mediastinum must be treated by surgical drainage, and is associated with high mortality.[14] Computed tomography is effective for diagnosing this condition.

Immunosuppressants such as MTX can cause abscesses in various sites of the body. Abscesses in the oviduct,[15] iliopsoas muscle,[16] epidural space,[17] and brain[18] have been reported in patients on MTX. However, no reports of cervical abscess treatment following MTX use in RA patients have been described. The present cases thus seem relatively rare, and underline the importance of care and long-term observation required for RA patients receiving immunosuppressants after undergoing treatments that may induce oral infections, such as tooth extraction.

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