

Parotid abscess at a single institute in Korea

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Abstract

Objective: To investigate clinical features, treatment modality, and outcomes of patients with parotid abscess.

Methods: A retrospective chart review was conducted at Chonnam National University Hwasun Hospital January, 2006 to July, 2017.

Results: Among 13 patients, 4 patients had immunocompromised disease, and 3 patients had been diagnosed with pre-existing parotid tumor. Patients were treated with empirical intravenous broad-spectrum antibiotics. Among 13 patients, 7 patients (53.8%) had surgical incision, and drainage was conducted. There was no recurrence or death associated with parotid abscess; however, 1 patient with parotid abscess developed facial nerve palsy that persists, despite adequate treatment.

Conclusion: After adequate treatment, including antibiotics and surgical drainage, the prognosis of parotid gland is good. In the case of parotid abscess of immunocompromised patients, we suggest rapid surgical procedure for speedy recovery and minimizing adverse effects.

Abbreviation: CT = computed tomography.

Keywords: abscess, antibiotics, parotid gland, surgical procedure

1. Introduction

Parotid abscess is rare disease in children and adults, and is most found in patients with immunocompromised, dehydrated, or postoperative conditions.^[1-4] In addition, it is difficult to distinguish between parotid abscess and acute parotitis without further radiologic examinations.^[2] Therefore, there have not been many reports on parotid abscess.^[1-4]

This study presents our 12-year experience with 13 cases of parotid abscess in an institute. The purpose of this study was to investigate clinical features, treatment modality, and outcomes of patients with parotid abscess.

2. Materials and methods

After obtaining approval from the Institutional Review Board of Chonnam National University Hwasun Hospital, a retrospective chart review was conducted to evaluate patients with diagnosis of parotid abscess at the Department of Otolaryngology-Head and Neck Surgery (January, 2006 to July, 2017). Thirteen patients

with parotid abscess diagnosed by computed tomography (CT) were enrolled in this study.

Charts were reviewed to obtain information about age at diagnosis, sex, underlying disease, symptoms, symptom duration, location and size of parotid abscess, diagnostic modality, treatment method, microbiological results, hospitalization period, and complications.

3. Results

A summary of 13 cases (11 males [84.6%] and 2 females [15.4%]; age range 7–80; mean 51.0 ± 24.3) is presented in Table 1. Among 13 patients, 4 had immunocompromised disease, such as diabetes mellitus (n=2), cyclic neutropenia (n=1), and aplastic anemia (n=1). Three patients had been diagnosed with pre-existing parotid tumor for 1 month, 1 month, and 2 years, respectively, without prior surgical treatment. Two patients had a history of dental problems. There is no one with history of recent operation or recurrent parotid infection.

Thirteen patients with parotid abscess presented with unilateral parotid swelling and pain. Duration of symptoms ranged from 1 to 30 days (mean 9.4 ± 10.3 days). All patients had undergone CT scan to determine the extent of the lesion and to eliminate other diseases. The location of the parotid abscess was the right side of the neck in 9 patients (69.2%), and the left side of the neck in 4 patients (30.8%). Six patients (46.1%) had lesions in the superficial lobe of parotid gland, 3 (23.1%) had a lesion in the deep lobe, and 4 (30.8%) had a lesion in the entire parotid gland. The size of parotid abscess ranged from 1.3 to 4.5 cm (mean 3.4 ± 1.0 cm).

Patients were treated with empirical intravenous broad-spectrum antibiotics, fluid supplementation, and oral hygiene maintenance. Among 13 patients, 7 patients (53.8%) had surgical incision and drainage conducted. There were no major complications resulting from surgical intervention. One patient did not improve the parotid abscess after the first surgical intervention, and required further surgery.

In microbiologic study, abscess culture was derived from 9 patients, 4 patients were positive, and 5 were negative for bacterial

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Table 1**Clinical summary of our patients with parotid abscess.**

Age/sex	Underlying disease	Symptom duration, d	Site	Location	Size, cm	Treatment method	Bacterial culture	Hospital period, d	Facial palsy
11/M		2	Right	Superficial	1.3	Antibiotics		10	
7/M	Neutropenia	1	Left	Superficial	4.5	Antibiotics + surgery*	<i>Pseudomonas Aeruginosa</i>	41	Yes
61/M		5	Right	Superficial	2	Antibiotics + surgery	No growth	9	
21/M		30	Right	Superficial	4.4	Antibiotics + surgery	<i>Prevotella intermedia</i>	8	
56/M		1	Left	Deep	4.2	Antibiotics		8	
80/M		5	Right	Total	3.7	Antibiotics + surgery	<i>Staphylococcus epidermidis</i>	12	
46/M	Parotid tumor	3	Right	Total	4.2	Antibiotics + surgery	No growth	13	
63/M	DM, parotid tumor	1	Right	Total	4	Antibiotics + surgery	<i>P. acnes</i>	10	
80/F	AA	3	Right	Total	4	Antibiotics		5	
75/M	Parotid tumor	14	Right	Deep	3.3	Antibiotics		14	
75/M	DM	20	Right	Superficial	3.3	Antibiotics + surgery	No growth	23	
41/M		7	Left	Deep	2.5	Antibiotics	No growth	8	
47/F		30	Left	Superficial	2.4	Antibiotics	No growth	18	

AA=aplastic anemia, F=female, M=male.

*One patient had 2 surgical interventions conducted.

growth. For 4 patients with positive bacterial culture, *Pseudomonas aeruginosa*, *Prevotella intermedia*, *Staphylococcus epidermidis*, and *Propionibacterium acnes* were isolated, respectively.

Duration of the hospitalization period ranged from 5 to 41 days (mean 13.8 ± 9.1 days). One patient with parotid abscess developed facial nerve palsy, despite antibiotics treatment. The facial nerve palsy was not improved after 2 surgical interventions, and has persisted at 3 years' follow-up. Among 3 patients with pre-existing parotid tumors, 1 patient had parotidectomy conducted after recovery of parotid abscess, diagnosed as a Warthin tumor. Another patient is expected to undergo parotid tumor surgery this year. The last patient was lost in follow-up after discharge from our hospital.

Recurrence or death associated with parotid abscess was not observed in patients at the time of the last follow-up.

4. Discussion

Parotid abscess can arise from ascending infection via Stensen duct, or secondary to bacteraemia.^[1,5,6] Parotid abscess is commonly associated with elderly debilitated, or immunocompromised patients.^[1-4] In this study, there were 7 patients (53.8%) in old age, or immunocompromised state. One occurrence in our study: there were 3 patients with pre-existing parotid tumors.

The most common symptom of parotid abscess is painful swelling at the angle of the jaw, and patients had presented this symptom.^[1,2,5,7,8] Regional lymphadenopathies, facial nerve palsy, or purulent secretion from Stensen duct can sometimes be detected.^[1,7] Facial nerve palsy may develop due to virulent microorganism, perineuritis, or nerve compression.^[4] In some patients, parotid abscess progress necrosis of parotid gland, deep neck space infection, or septicaemia, and can be life-threatening.^[3,8] In this study, necrotizing parotitis and septicemia occurred in 7-year-old boy with cyclic neutropenia. We treated the patient with intravenous antibiotics and 2 surgeries.

However, it is difficult to distinguish between parotid abscess and acute parotitis by clinical features, and radiologic examinations are required.^[1,2,6] CT and ultrasound are critical diagnostic modalities of parotid abscess.^[1,2,5,6] Ultrasound has the advantage of being noninvasive, easy, fast, and inexpensive.^[5] In addition, it is also useful in parotid abscess aspiration and evaluation of treatment results.^[5] CT is most commonly used to diagnose parotid abscess.^[1,2,6] We conducted CT scans in

patients. In parotid abscess, CT scans reveal low attenuated lesion, single cystic like lesion, multiple loculated appearance, or contrast enhancement of the abscess wall.^[2]

The most common pathogen of parotid abscess is *Staphylococcus aureus*.^[1,3,5] However, low rate of positive culture of parotid abscess has been reported because of preadmission antibiotic therapy, as with our results.^[3]

Management of parotid abscess includes administration of broad-spectrum antibiotics, hydration, and surgical drainage.^[1-8] Compared with acute parotitis, parotid abscess often requires surgical drainage. Surgical drainage is necessary if failure of medical therapy and facial nerve involvement, spread to deep neck space, or risk of septicemia.^[1,2,6,8] In this study, 7 patients (53.8%) had surgical incision and drainage conducted according to above indications. One patient did not improve the parotid abscess after the first surgical incision and drainage, and superficial parotidectomy was conducted.

After adequate treatment of parotid abscess, the prognosis is good.^[1,2,6] Facial nerve palsy due to parotid abscess also has good prognosis.^[6] In this study, we found no recurrence or death associated with parotid abscess; however, 1 patient with parotid abscess developed facial nerve palsy that has persisted at 3 years' follow-up. Immunocompromised patients had lengthier hospitalization period, as with previous reports.^[1,2] The limitation of this study was the small sample size and retrospective review.

5. Conclusions

Parotid abscess is a rare clinical condition, and radiologic examinations are required for differentiating from other parotid diseases. If adequate treatment, such as administration of broad-spectrum antibiotics and surgical drainage may be conducted, prognosis of parotid gland is good. In case of parotid abscess of immunocompromised patients, we suggest rapid surgical procedure for speedy recovery and minimizing adverse effects.

Author contributions

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