

Temporal Fossa Abscess Caused by Apical Periodontitis: A Case Report

Sayaka Yoshiba^{1*}, Takaaki Kamatani², Tatsuo Shirota²

¹Department of Dental and Oral Surgery, Showa University Northern Yokohama Hospital, Tokyo, Japan

²Department of Oral and Maxillofacial Surgery, Showa University School of Dentistry, Tokyo, Japan

Email: *yoshiba@dent.showa-u.ac.jp

How to cite this paper: Yoshiba, S., Kamatani, T. and Shirota, T. (2018) Temporal Fossa Abscess Caused by Apical Periodontitis: A Case Report. *Open Journal of Clinical Diagnostics*, 8, 47-51.

<https://doi.org/10.4236/ojcd.2018.84005>

Received: November 1, 2018

Accepted: December 22, 2018

Published: December 25, 2018

Copyright © 2018 by authors and Scientific Research Publishing Inc.

This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).

<http://creativecommons.org/licenses/by/4.0/>



Open Access

Abstract

According to the progress of the antibiotic medicine, the severe infection case is decreasing recently. We recently experienced a case of temporal fossa abscess caused by periapical periodontitis the upper left side of the second molar. A 79-year-old woman visited to Showa University Dental Hospital complaining of the painful swelling at the left side of the temporal and trismus. The routine blood test exhibited a severe inflammation. We performed drainage treatment at temporal skin and normal oral bacterial flora was detected by the bacteriological examination. Under treatment included the administration of antibiotics, the inflammation healed without serious complication and she recovered completely.

Keywords

Temporal Fossa Abscess, Odontogenic Infection, Apical Periodontitis

1. Introduction

The infratemporal fossa is described as a skull base space bounded superiorly by the greater wing of sphenoid and temporal fossa; anteriorly by the posterior wall of the maxillary sinus; medially by the lateral pterygoid plate; laterally by the mandibular ramus; and posteriorly by the deep lobe of the parotid gland; it opens inferiorly into the parapharyngeal space. Infections in this space have been found following maxillary sinusitis, maxillary sinus fracture, temporomandibular arthroscopy, dental infection and tooth extraction. Temporal fossa abscess is a rare and challenging condition to diagnose and manage. We experienced a temporal fossa abscess caused by an apical periodontitis.

2. Case Report

A 79-year-old woman was referred to our department complaining of a painful swelling at the left side of the temporal region and trismus. The medical history was osteoporosis, however she did not take any medication. The family history was unremarkable.

Extraoral examination showed a diffuse, elastic soft, and painful swelling at the left side of the temporal region (**Figure 1(a)**). Intraoral finding, the left side of upper second molar showed percussion pain and gingival tenderness of apical area (**Figure 1(b)**). Panoramic and dental X-ray exhibited transmission image at the upper left side of the second molar (**Figure 1(c)**). The leukocytes and c-reactive protein (CRP) were increased up to 10,300/ μ l and 11mg/dl respectively on blood test. The biochemical examination showed a decrease in albumin for difficult food intake by trismus (**Table 1**). Computed tomography showed low density area range from pterygomandibular region to temporal region, and abscess formation suspected (**Figure 2**). We diagnosed that the temporal fossa abscess due to the periapical periodontitis of the upper left side of the second molar. The patient was hospitalized immediately for anti-inflammatory treatment. We performed drainage treatment and the incision line was designed at temporal skin while paying attention to the temporal branch of the facial nerve on day 1. *Fusobacterium* species was detected in pus. ABPC 3 g/day was administrated for intravenous from day 1 to day 4. Since the drainage amount was reduced, ABPC was diminished to 2 g/day on day 5. The leukocytes and CRP were decreased 5500/ μ l and 0.5 mg/dl respectively on day 9. The mouth opening training performed and the inter-incisal distance was improved from 5 mm to 20 mm.

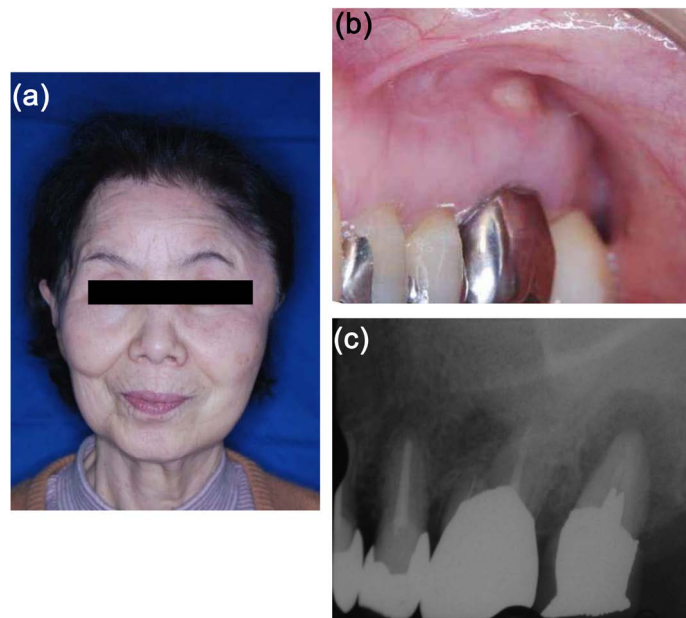


Figure 1. (a) Extra-oral finding at the first visit. (b) Intra-oral findings at the first visit. (c) Dental X-ray confirmed a transmission image at apical of the upper left side of the second molar.

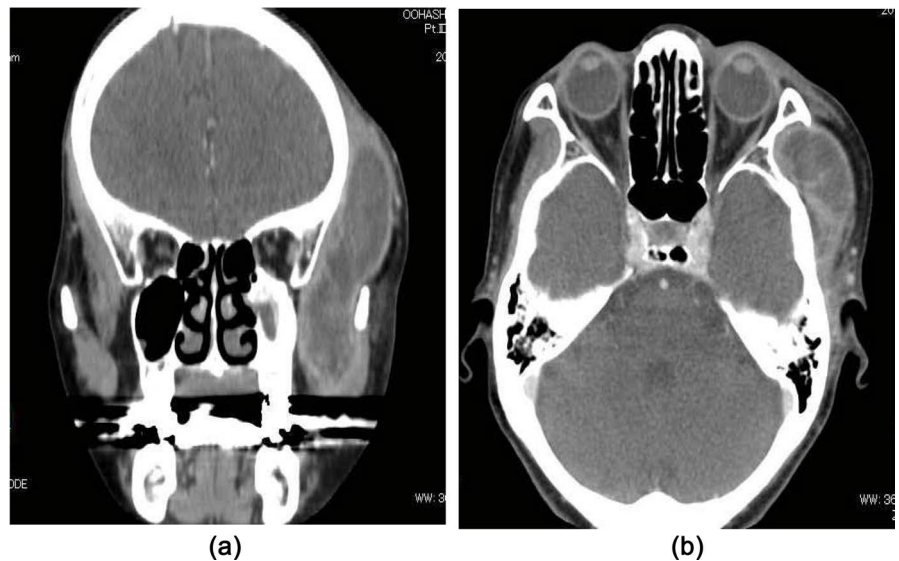


Figure 2. CT images showed low density area at the left side of the temporal area.

Table 1. The summary of blood and biochemical examination.

Inspection item	Measured value	Reference value
WBC ($10^3/\mu\text{L}$)	10.3	4.0~9.0
RBC ($10^4/\mu\text{L}$)	308	380~480
Hb (g/dL)	9.7	12~16
Ht (%)	31	34~42
Pt ($10^4/\mu\text{L}$)	48.2	13~35
CRP (mg/dL)	11	0.0~0.3
TP (g/dL)	7.1	6.9~8.6
Alb (g/dL)	3.3	3.8~5.3
AST (U/L)	37	12~33
ALT (U/L)	32	5~35
BUN (mg/dL)	15.5	8~23
CRE (mg/dL)	0.54	0.6~1.2
Na (mEq/L)	136	135~147
K (mEq/L)	4.3	3.0~4.8
Cl (mEq/L)	99	98~108

We performed the extraction of the upper left side of the second molar on day 12. The patient recovered satisfactory and left hospital on day 15 (**Figure 3**). The patient continues to mouth opening training in the outpatient.

3. Discussion

The background to be triggered the severe odontogenic infection, there are the sparse connective tissue spaces which an inflammation is likely to spread in the head and neck area [1]. The inflammation that occurred in apical area of the maxillary molar was extended through buccinator muscle, pterygomandibular space, temporal space, pterygopalatine fossa, masticatory muscles space, and

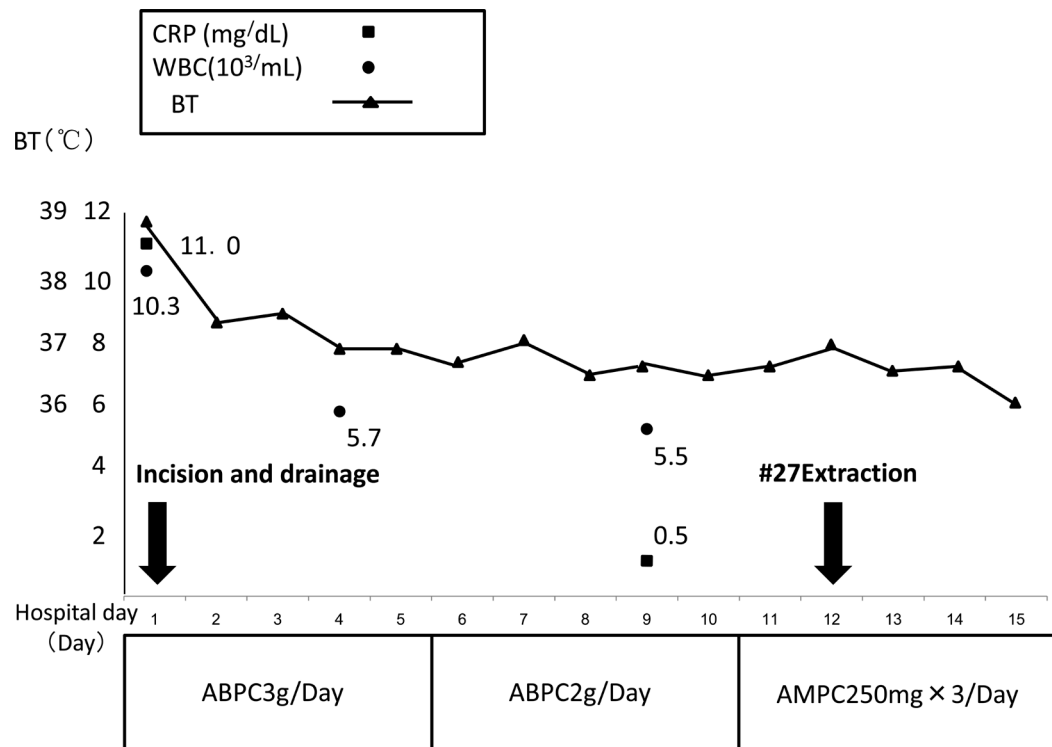


Figure 3. Summary of the clinical course.

spread to the temporal muscle in this case [2] [3]. As the case of infratemporal fossa abscess, Kasahara *et al.* [4] reported developing after extraction of a maxillary molar, and D Leventhal *et al.* [5] reported complication of dental injection. The spreading of a periapical infection into adjacent and/or remote connective tissue may, rarely, result in serious or even life-threatening complications.

There were the *Streptococcus milleri* group in aerobic bacteria and the *Fusobacterium*, *Peptostreptococcus*, and *Prevotella* in anaerobic bacteria as main causative bacteria of odontogenic infections [6] [7]. Our case also detected *Fusobacterium* species by a bacteriological examination. Odontogenic infection is caused by polymicrobial infection, so it is necessary to administer susceptible drug against to causative bacteria. ABPC was a sensitivity for *Fusobacterium* species and choice of antibiotic which was used this time was appropriate [8]. Because there is also a decrease in liver and renal function, it has to be careful to the emergence of side effect by administration of antibiotics in elderly patients. In our case, it was not confirmed abnormal systemic matter which confirmed by regular blood test.

The development of antibiotics, odontogenic infection associated with severe case is rare [9]. However, there are extensive severe infection cases that reach the mediastinum and the base of the skull under various conditions. Even odontogenic infection, the appropriate diagnosis and treatment may not have been performed at the beginning of the inflammation, and the administration of inappropriate antibiotics have been made, the inflammation proceeds through the surrounding tissue and causes severe symptoms. We performed precision diagnosis

and appropriate treatment by antibiotics and drainage treatment, so the inflammation healed without serious complication and she recovered completely.

4. Conclusion

We reported a case of temporal fossa abscess caused by periapical periodontitis at the upper left side of the second molar in a 79-year-old woman.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

- [1] McMinn, R.M.H., Hutchings, R.T. and Logan, B.M. (1981) A Colour Atlas of Head and Neck Anatomy. *British Journal of Surgery*, **68**, 750.
- [2] Diacono, M.S. and Wass, A.R. (1998) Infratemporal and Temporal Fossa Abscess Complicating Dental Extraction. *Emergency Medicine Journal*, **15**, 59-61. <https://doi.org/10.1136/emj.15.1.59>
- [3] El-Sheikh, M.M. and El-Hak, R.Y. (1972) Infections of the Infratemporal Space. *British Journal of Oral Surgery*, **10**, 189-192. [https://doi.org/10.1016/S0007-117X\(72\)80035-0](https://doi.org/10.1016/S0007-117X(72)80035-0)
- [4] Kasahara, K., Ogawa, C., Matsuzaka, K., Yamamura, T., Takano, M., Saitou, C. and Shibahara, T. (2015) A Case of Infratemporal Fossa Abscess with Signs of Chronic Maxillary Osteomyelitis. *The Bulletin of Tokyo Dental College*, **56**, 121-129. <https://doi.org/10.2209/tdcpublishion.56.121>
- [5] Leventhal, D. and Schwartz, D.N. (2008) Infratemporal Fossa Abscess: Complication of Dental Injection. *Archives of Otolaryngology—Head & Neck Surgery*, **134**, 551-553. <https://doi.org/10.1001/archotol.134.5.551>
- [6] Lewis, M.A.O., MacFarlane, T.W. and McGowan, D.A. (1986) Quantitative Bacteriology of Acute Dento-Alveolar Abscesses. *Journal of Medical Microbiology*, **21**, 101-104. <https://doi.org/10.1099/00222615-21-2-101>
- [7] Brook, I., Frazier, E.H. and Gher, M.E. (1991) Aerobic and Anaerobic Microbiology of Periapical Abscess. *Oral Microbiology and Immunology*, **6**, 123-125. <https://doi.org/10.1111/j.1399-302X.1991.tb00464.x>
- [8] Sabiston Jr., C.B. and Gold, W.A. (1974) Anaerobic Bacteria in Oral Infections. *Oral Surgery, Oral Medicine, Oral Pathology*, **38**, 187-192. [https://doi.org/10.1016/0030-4220\(74\)90054-1](https://doi.org/10.1016/0030-4220(74)90054-1)
- [9] Quayle, A.A. (1974) Bacteroides Infections in Oral Surgery. *Journal of Oral Surgery*, **32**, 91.