Synovial Cyst of the Temporomandibular Joint: Report of a case

Yu Chen, Mikiko Suzuki, Shoko Siraki, Teruo Kayano, Teruo Amagasa* and Minoru Takagi

Department of Oral Pathology, Department of Oral & Maxillofacial Surgery*, Faculty of Dentistry, Tokyo Medical and Dental University, 1-5-45, Yushima, Bunkyo-Ku, Tokyo 113-8549, Japan

Chen Y, Suzuki M, Siraki S, Kayano T, Amagasa T and Takagi M. Synovial cyst of the temporomandibular joint: Report of a case. *Oral Med Pathol* 1998; 3: 97-99 ISSN 1342-0984

This report presents a case of synovial cyst of the temporomandibular joint, which is rarely involved in this region. Histopathological characteristics of the cyst are described in detail. The diagnosis differentiating it from ganglion is also discussed, while synovial cyst is a true cyst lined by synovial cells, ganglion is a pseudocyst lined by dense connective tissues. Immunohistochemical staining may be helpful in identifying the lining cells of the synovial cyst.

Key words: synovial cyst, ganglion, temporomandibular joint, α -1-antichymotrypsin.

Correspondence: Yu Chen, Department of Oral Pathology, Faculty of Dentistry, Tokyo Medical and Dental University, 1-5-45, Yushima, Bunkyo-Ku, Tokyo 113-8549, Japan
Phone 03-5803-5453 Fax 03-5803-0188

Introduction

Synovial cyst and ganglion are lesions rarely involved in the region of the temporomandibular joint (TMJ). Five cases of synovial cyst (1-5) and 9 cases of ganglion (1,6-13) have been reported in the literature. However, both terms are often used interchangeably and the two lesions are erroneously considered to be the same one. Synovial cyst is a true cyst lined by synovial cells with gelatinous fluid and it may or may not communicate with the joint cavity. On the contrary, ganglion is a pseudocyst lined by dense connective tissue with viscous or gelatinous cystic content and it does not communicate with the joint cavity.

This paper reports a case of synovial cyst of the temporomandibular joint and discusses the differential diagnosis using immunohistochemical staining of α -1-antichymotrypsin.

Case report

A 59-year-old man visited the oral and maxillofacial surgery clinic of our university hospital on January 14, 1998, with complaint of a swelling of one month's duration in front of the left ear. A 3-cm sized mass was present in the left preauricular region and fixed to the underlying structures. MRI and CT scan showed a round cystic lesion immediately lateral and adjacent to the left temporomandibular joint, and it did not appear to involve the joint (Fig.1). Biopsy on February 4, 1998, was diagnosed as "normal parotid tissues". Excision of the lesion was performed two months later. The post-operative course was uneventful.

The patient underwent split therapy for the

Fig.1: Axial CT at the level of TMJ. A round cystic lesion (arrows) is seen lateral to the left condyle (C).

dysfunction syndrome of left temporomandibular joint in 1993.

Pathologic findings

Grossly, the lesion had a smooth and yellowish-brown capsule and appeared oval shaped with a size of

1.5×1.0 cm. The cystic cavity was multiloculated and filled with yellowish and mucinous material.

Microscopically, the lesion had multiloculated cysts and slit-like structures (Fig.2). The multiloculated cysts usually had thin walls and a lining of monolayered flattened cells, occasionally with two to three layers of polygonal cells (Fig.3). Histiocytes with foamy appearance were occasionally seen in the cystic cavity. In the cyst wall, small vascular channels and fusiform or polygonal cells were conspicuous in some areas (Fig.4).

Slit-like structures were present, adjacent to the cyst and lined with discontinuous flattened cells. They contained a small amount of fibrin-like substance. Moreover, limited areas of hyalinous fibrosis were seen adjacent to the cyst, which showed focal cartilagenous metaplasia and contained entrapped small parotid tissue.

Immunohistochemical staining (streptavidin-biotin method) for vimentin (Dako M 0725, 1:50), α -1-antichymotrypsin (Dako A 022, 1:200), cytokeratin (Cosmo Bio 1918, 1:200) and epithelial membrane antigen (EMA) (Dako M 0613, 1:80) were performed. Specific positive staining for α -1-antichymotrypsin was seen mainly in the cytoplasm of lining cells of the cyst

Fig.2: The multiloculated cyst (C) is mostly composed of thin wall, and partially of thick sessile base-like wall. Slit-like structures (S) and hyalinous fibrosis (Hy) are present adjacent to the cyst. Hyalinous fibrosis shows partly cartilagenous metaplasia (Ch) and contains entrapped small parotid gland (P) (HE, $\times 5.8$).

Fig.3: A layer of flattened cells (arrow) lining cystic cavity and foamy histiocytes in the cavity are seen (HE, $\times 152$).

Fig.4: Small vascular channels (arrow) and polygonal cells (hollow arrow) are conspicuous in the wall of the cyst (HE, $\times 80$).

Fig.5: Positive immunohistochemical staining for α -1-antichymotrypsin is seen only in the flattened lining cells ($\times 200$).

(Fig.5). Vimentin was positive in both the lining cells and fibrous cells of the cyst wall. Cytokeratin and EMA were negative.

Discussion

Although synovial cyst and ganglion are different lesions with their own histological character and histogenesis, they are often erroneously considered to be the same. Confusion is thought to be due to the difficulty and subjectivity of the precise histologic identification of the flattened lining cells of the cyst as synovial cells.

In the present case, a diagnosis of synovial cyst is favored based on the following findings. In the hematoxylin and eosin staining, flattened lining cell layer of the cyst, which looked like synovial cells, could be identified. Moderate amounts of vascularization, and the appearance of fusiform or polygonal cells in the cyst wall favored a diagnosis of synovial cyst. Immunohistochemical results showed that the lining cells were specifically stained for α -1-antichymotrypsin. α -1-antichymotrypsin is specially stained in histiocytes and synovium-originated cells, and it was confirmed in our positive control. The synovial cells in a synovial cyst of the foot

and a synovial chondromatosis of the temporomandibular joint showed specially positive staining for α -1-antichymotrypsin. 2 cases of old mucous cysts with obvious border cells were also stained for α -1-antichymotrypsin, but no specially positive staining was detected in these cysts. We could not obtain ganglion as a control case. However, it is suggested that immunohistochemical staining, especially α -1-antichymotrypsin staining, may be helpful in identifying the lining cells as synovial cells.

As to pathogenesis, synovial cysts are true cysts and they develop due to herniation of the synovium into the surrounding tissues, or displacement of synovial tissue during embryogenesis. Herniation of the synovium might be caused by trauma and/or inflammatory processes. Ganglions are considered to be a result of myxoid degeneration and cystic softening of periarticular connective tissues. Reyhler et al. (2) and Janecka et al. (1) reported synovial cysts of TMJ due to trauma. Bonacci et al. (4) reported a case of inflammatory synovial cyst of TMJ. In the present case, abnormal force on the joint by dysfunction of TMJ might be one of the possible causes, and the presence of hyalinous fibrosis adjacent to the cyst might support this consideration. Pathogenesis of the slit-like structure was unknown.

In the clinical diagnosis of this lesion, there is some difficulty. Synovial cyst and ganglion of TMJ are sometimes confused with parotid gland lesions (2, 5, 7, 11, 12). A preoperative biopsy in the present case also showed "normal parotid gland", and so histological examination of the correctly excised specimens is mandatory for confirmed diagnosis.

Acknowledgment

We thank the Sasagawa Medical Research Fund for funds to conduct the study.

References

1. Janecka IP and Conley JJ. Synovial cyst of temporomandibular joint imitating a parotid tumour; A case report.

J Max-fac Surg 1978; **6**: 154-6.

2. Reyhler H and Fievez C. Synovial cyst of the temporomandibular joint. A case report. *J Max-fac Surg* 1983; **11**: 284-6.
3. Farole A and Johnson MW. Bilateral synovial cysts of the temporomandibular joint. *J Oral Maxillofac Surg* 1991; **49**: 305-7.
4. Bonacci CE, Lambert BJ, Pulse CL, et al. Inflammatory synovial cyst of the temporomandibular joint: a case report and review of the literature. *J Oral Maxillofac Surg* 1996; **54**: 769-73.
5. Chang YM, Chan CP, Kung SF, et al. Ganglion cyst and synovial cyst of the temporomandibular joint. Two case reports. *Int J Oral Maxillofac Surg* 1997; **26**: 179-81.
6. Heydt S. A ganglion associated with the temporomandibular joint. *J Oral Surg* 1977; **35**: 400-1.
7. Ethell AT. A rare "parotid tumour". *J Laryngol Otol* 1979; **93**: 741-4.
8. Kinkead LR, Bennett JE and Charles ET. A ganglion of the temporomandibular joint presenting as a parotid tumor. *Head Neck Surg* 1981; **3**: 443-5.
9. Shiba R, Suyama T and Sakoda S. Ganglion of the temporomandibular joint. *J Oral Maxillofac Surg* 1987; **45**: 618-21.
10. Copland M and Douglas B. Ganglions of the temporomandibular joint: case report and review of the literature. *Plast Reconstr Surg* 1988; **81**: 775-6.
11. El-Massry MAK and Bailey BMW. Ganglion of the temporomandibular joint: case report and literature survey. *Br J Oral Maxillofac Surg* 1989; **27**: 67-70.
12. Hopper C and Banks P. A ganglion of the temporomandibular joint: a case report. *J Oral Maxillofac Surg* 1991; **49**: 878-80.
13. McGuirt WF and Myers EN. Ganglion of the temporomandibular joint presentation as a parotid mass. *Otolaryngol Head Neck Surg* 1993; **109**: 950-3.

(This report was presented at the 9th Annual Meeting of the Japanese Society for Oral Pathology.)

(Accepted for publication November 5, 1998)