CASE REPORT

Multiple nodular fasciitis in the mandibular border area which is misdiagnosed as metastatic lymph node

J-Y Song¹, S-G Kim^{*1}, S-K Lee² and I-W Park³

¹Department of Oral and Maxillofacial Surgery, College of Dentistry, Gangneung-Wonju National University, Gangneung, Republic of Korea; ²Department of Oral Pathology, College of Dentistry, Gangneung-Wonju National University, Gangneung, Republic of Korea; ³Department of Oral and Maxillofacial Radiology, College of Dentistry, Gangneung-Wonju National University, Gangneung, Republic of Korea

Nodular fasciitis (NF) is a benign lesion that has proliferative fibroblasts and myofibroblasts. NF is similar to a tumour and has infiltrative properties. We describe a rare case of multiple nodular fasciitis occurring in the mandibular border area of a 51-year-old male. Radiological and histological features are discussed along with a brief review of the literature. In addition, the importance of a differential diagnosis for this lesion is also discussed.

Dentomaxillofacial Radiology (2013) **42**, 29206157. doi: 10.1259/dmfr/29206157

Cite this article as: Song J-Y, Kim S-G, Lee S-K, Park I-W. Multiple nodular fasciitis in the mandibular border area which is misdiagnosed as metastatic lymph node. *Dentomaxillofac Radiol* 2013; **42**: 29206157.

Keywords: nodular fasciitis; mandibular border; magnetic resonance imaging

A 51-year-old male visited our hospital with an enlarging mass on the inferior border of the mandible. He had a nodular lesion that was rapidly growing and painful to palpation for 2 weeks prior to his visit. He had no trauma or surgical history and well controlled hypertension. Clinically, the lesion measured 1.5 × 2 cm and was sessile, firm and immobile. The lesion had normal skin colour and texture. No skin rash or ulceration was observed (Figure 1). Intraoral examination was within the normal range.

The pre-operative panoramic view showed no specific findings (Figure 2). MRI showed three round isointense masses which were 0.5 cm, 1 cm and 1.5 cm in size on the T_1 weighted image (WI) (Figure 3a). They were located under the mylohyoid muscle in a superioinferior manner and beneath the platysma muscle in a sagittal manner. They appeared as a slightly hyperintense signal on the T_2 WI (Figure 3b) and as a homogeneous, moderate enhancement on the T_1 WI (Figure 3a). There was no definite bone destruction in the surrounding area and no abnormal findings for the surrounding soft tissue. The presentation of the lesion suggested metastatic lymph nodes. We performed incisional biopsy using an extraoral approach under local anaesthesia.

In the pathological diagnosis, highly proliferative fibrous tissue was observed with infiltrative growth into the periphery (Figure 4a). The spindle cells were strongly positive for proliferating cell nuclear antigen (PCNA), β -catenin and partly positive for α -smooth muscle actin (α -SMA) (Figure 4b,c,d). They were negative for S-100 and desmin (data not shown). Finally, the mass turned out to be nodular fasciitis (NF) with pseudo-sarcomatous proliferation. After these histological features were diagnosed as NF, the lesion was totally excised

Figure 1 Pre-operative clinical photograph. The lesion is sessile and has normal skin colour and texture

*Correspondence to: Professor Seong-Gon Kim, Department of Oral and Maxillofacial Surgery, College of Dentistry, Gangneung-Wonju National University, Gangneung-daehak-ro 120, Gangneung, Gangwondo 210-702, Republic of Korea. E-mail: epker@chollian.net

Received 19 April 2011; revised 28 May 2011; accepted 10 June 2011

Figure 2 No specific findings are shown in the pre-operative panoramic radiography

under general anaesthesia. The definitive diagnosis was confirmed as NF. No sign of NF recurrence was detected after the operation.

Discussion

NF is a benign lesion that has proliferative fibroblasts and myofibroblasts. NF is similar to a tumour and has infiltrative properties.^{1,2} It presents as a rapid growing fibroblastic tissue which is solitary and mostly painless although sometimes it presents with pain characteristics. People are commonly afflicted in the third to fifth

decades of their life and there is no significant difference between genders.² The most prevalent region of NF is the upper extremities followed by the trunk.^{2,3} The head and neck region is the next most prevalent region, with infants and children being affected.³ The pathogenesis of NF is unknown.² Local resection is the first choice of treatment. After total resection, recurrence is extremely rare.^{1,2}

Although NF usually has high signal intensities on T_1 WI and T_2 WI, various intensities of the signal have been observed. It may reflect the different kind of cellularity constituting NF such as collagen, cytoplasm, water content of the extracellular space and vascular content in the individual lesion.⁴ MR images of presented cases should be differentially diagnosed from multiple cervical lymphadenitis. Multiple cervical lymphadenitis on MR images is usually found in tubercular lymphadenitis,⁵ multiple myeloma⁶ and Hashimoto's thyroiditis.⁷ According to the disease progression and degree of nodal necrosis, cervical lymphadenitis also has a wide spectrum of signal intensity in the MR image.⁸ Therefore, careful clinical examination including a purified protein derivatives test and a blood test is helpful for differential diagnosis.

Histologically, NF shows proliferative, tumour-like, immature fibroblastic lesions with rich cellularity and mitotic activity. Recognizable vascularity is often observed. Therefore, it is occasionally misdiagnosed as a sarcoma.^{1,4} In immunohistochemical staining, NF

a

b

Figure 3 Pre-operative MR image. (a) Contrast enhanced T_1 weighted MR image. Three round isointense masses, which are 0.5 cm, 1 cm and 1.5 cm in size, are shown (arrows). They have a homogeneous, moderately enhanced signal. (b) Three round masses have a slightly hyperintense signal in the T_2 weighted MR image (arrows)

Figure 4 Histological findings. (a) Proliferation spindle cells showed the whirling pattern in the vascular stromal tissue (haematoxyllin and eosin stain). (b) Many spindle cells in the peripheral pseudosarcomatous area are positive for proliferating cell nuclear antigen. (c) The proliferation spindle cells are strongly positive for β -catenin. (d) Diffuse positive reaction in the perivascular connective tissue for α -smooth muscle actin

contains vimentin and variable actin but does not have desmin, keratin or S-100 protein.² If the lesion is close to the salivary gland, benign and malignant diseases involved with the salivary gland should be included in the differential diagnosis. Pleomorphic adenoma and myoepithelioma are usually confused with NF. Positive immunochemical staining with cytokeratin and S-100 helps in the diagnosis of pleomorphic adenoma and myoepithelioma.⁴

References

1. Lenyoun EH, Wu JK, Ebert B, Lieberman B. Rapidly growing nodular fasciitis in the cheek of an infant: case report of a rare presentation. *Eplasty* 2008; **29**: 296–302.
2. Werning JT. Nodular fasciitis of the orofacial region. *Oral Surg Oral Med Oral Pathol* 1979; **48**: 441–446.
3. Jang EJ, Park TI, Nam SC, Park JY. Nodular fasciitis in the submandibular gland. *Diagn Cytopathol* 2008; **36**: 805–808.
4. Sharma AK, Scott G, Westesson PL. MRI sign of nodular fasciitis: a case report. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2008; **105**: e53–e56.

5. Agarwal AK, Sethi A, Sethi D, Malhotra V, Singal S. Tubercular cervical adenitis: clinicopathologic analysis of 180 cases. *J Otolaryngol Head Neck Surg* 2009; **38**: 521–525.
6. Brady-West DC, Buchner-Daley LM, McGrowder DA, Taylor-Houston J, West KA. Multiple myeloma presenting as cervical lymphadenopathy in a 16-year old boy. *J Natl Med Assoc* 2009; **101**: 810–812.
7. Paksov N, Yazal K. Cervical lymphadenopathy associated with Hashimoto's thyroiditis: an analysis of 22 cases by fine needle aspiration cytology. *Acta Cytol* 2009; **53**: 491–496.
8. Moon WK, Han MH, Chang KH, Im JG, Kim HJ, Sung KJ, et al. CT and MR imaging of head and neck tuberculosis. *Radiographics* 1997; **17**: 391–402.