Case Report

Low-grade fibromyxoid sarcoma involving the mandible: A diagnostic dilemma

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Abstract

Low-grade fibromyxoid sarcoma (LGFMS) is a distinctive variant of fibrosarcoma with a high metastasizing potential and is characterized by a long interval between tumor presentation and metastasis. LGFMS involving the maxillofacial region is a very rare entity with only six cases reported till date. LGFMS is characterized by its benign histological appearance, with spindle cells in whorling pattern, and collagenized and myxoid areas. The heterogeneous histological appearance makes the diagnosis challenging. Immunohistochemical staining has been reported by a number of authors, with some conflicting results, showing positivity with vimentin, but no immunoreactivity with antibodies to keratin, desmin, actin, S100 or epithelial membrane antigen. We present a case of a 35-year-old male patient who developed a mass on the left mandibular body region. The tumor was excised along with mental nerve at the level of the mental foramen. The tumor on pathologic and immunohistochemical evaluation was diagnosed as LGFMS.

Key Words: Evan's tumor, low-grade fibromyxoid sarcoma, maxillofacial region

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INTRODUCTION

Low-grade fibromyxoid sarcoma (LGFMS) is a distinctive variant of fibrosarcoma, which was first described as a pathologic entity by Evans in 1987.[1] LGFMS presents as a rare soft tissue tumor with a high metastasizing potential, despite the benign histologic appearance.[1] These tumors usually occur in the lower extremities, followed by the trunk, groin, upper extremities, thorax, buttocks and abdominal wall; the maxillofacial region being rarely involved. The vast majority of LGFMS occur in a subfascial location; rarely, the subcutis or dermis may be affected. LGFMS typically involves young or middle-aged adults, but a large number of pediatric cases have also been reported. Here, we report a rare case of LGFMS involving the maxillofacial region.

CASE REPORT

A 35-year-old male patient reported to the Department of Oral Medicine and Radiology with a complaint of swelling in the mandibular left posterior region since 6 months [Figure 1]. History revealed that it was initially peanut sized, 6 months back but had gradually increased to the present size. There was no history of pain, trauma, paraesthesia or anesthesia, or pus discharge associated with the swelling. On examination, there was a solitary well-defined sessile swelling seen on the left

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body of the mandible, measuring approximately 3 cm × 2 cm in dimension. The skin over the swelling was normal with no abnormalities in the surrounding area. On palpation, there was no local rise in temperature. The swelling was nontender, firm in consistency, noncompressible, nonfluctuant and possessed no mobility. Intraoral examination revealed a mild vestibular obliteration in the region of 34, 35 and 36 [Figure 2]. Root stumps were present in relation to 18, 27 and 37. Based on the clinical findings, a provisional diagnosis of soft tissue tumor was given. The differential diagnoses considered were peripheral nerve sheath tumor, soft tissue fibroma and soft tissue sarcoma. The patient was subjected to various imaging investigations.

Orthopantomograph showed root stumps in relation to 37 and a subtle change in the trabecular pattern in the periapical region of 35, 36 and 37 [Figure 3]. Occlusal radiograph showed a well-defined soft tissue outline of the tumor on the buccal aspect with erosion of the buccal cortex in the region of 35 [Figure 4].

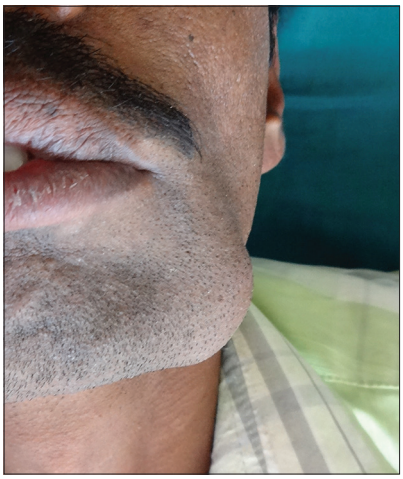

Figure 1: Extra orally, a well-defined ovoid sessile swelling seen on the body of the mandible on the left side

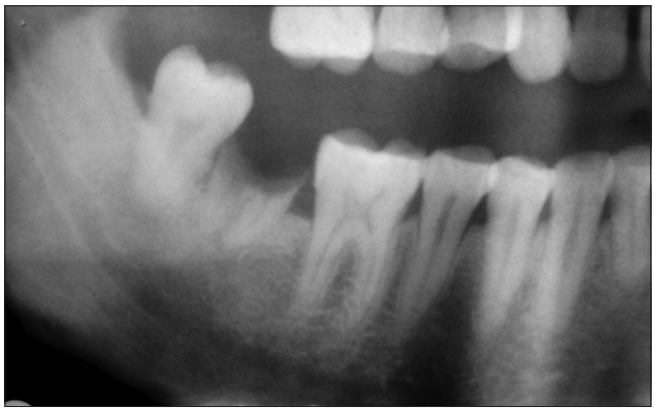

Figure 3: Cropped orthopantomograph showed root stumps wrt 37 and a subtle change in the trabecular pattern in the peripaical region of 35, 36 and 37

Ultrasonography (USG) revealed an ill-defined hyperechoic soft tissue lesion in the deep planes of the left submandibular region abutting the body of the mandible. The tumor revealed ill-defined margins with erosion of the underlying bone and insignificant vascularity. Marginally enlarged lymph nodes were noted in the left cervical region, largest measuring 1.1 cm in dimension. Computed tomography (CT) showed a well-defined encapsulated fusiform soft tissue mass with a density of 20–30 HU measuring 3 cm × 1.8 cm × 2.8 cm adjacent to the left body of the mandible. There was minimal appreciable enhancement and the tumor was causing scalloping of the adjacent bone with thinning of the buccal cortex [Figure 5].

Based on the radiological features, a diagnosis of benign nerve sheath tumor was made. Histopathological examination of core biopsy revealed loosely arranged fascicles of spindle cells with loose myxoid stroma. No cellular atypia was seen. The features were suggestive of a benign nerve sheath tumor.

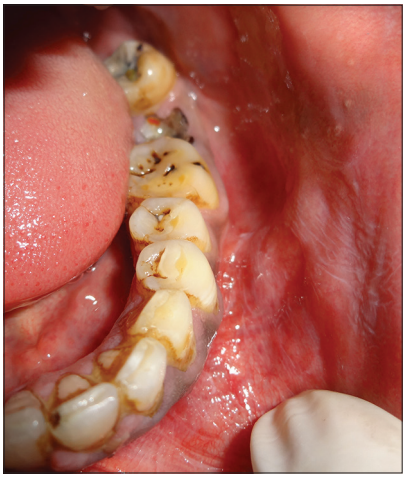

Figure 2: Intra oral examination revealed vestibular obliteration in the region of 34, 35 and 36 and root stumps in relation to 37

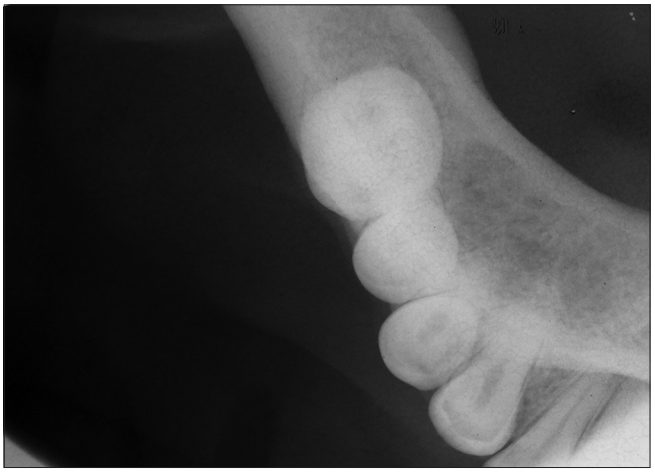

Figure 4: Occlusal radiograph showed a well-defined soft tissue outline of the tumour on the buccal aspect with erosion of the buccal cortical plate in the region of 35

Surgical excision of the tumor was done under general anesthesia. The tumor was seen encasing the mental nerve which was subsequently resected at the level of the mental foramen [Figure 6]. Cut section of the tumor showed a solid, gray-white mass with myxoid areas [Figure 7].

Histopathological examination showed a myxoid tumor with hypocellular areas in nodules merging with collagenised areas. Abundance of myxoid areas was seen insinuating between muscle and fascial planes. Bland spindle cells were seen in short fascicles and whorls in the myxoid zone. No mitoses or atypia were seen [Figure 8]. A diagnosis of LGFMS was made. Differential diagnoses included myxoid neurofibroma and schwannoma. Immunohistochemical analysis showed strong positivity for vimentin and negativity for S100 protein, desmin, smooth muscle actin (SMA), CD34, CD31, CD68, cytokeratin (AE1/AE3) and epithelial membrane antigen (EMA) [Figures 9 and 10]. Based on the histopathological and immunohistochemical findings, a final diagnosis of LGFMS was given.

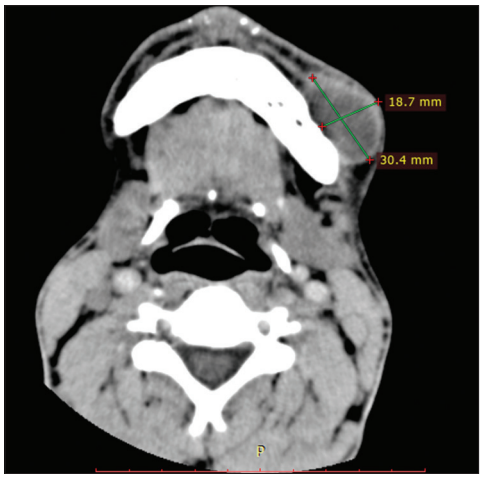

Figure 5: Computed tomography showed a well-defined encapsulated fusiform soft tissue mass with a density of 20–30 HU, minimal appreciable enhancement, causing scalloping of the adjacent bone and thinning of the buccal cortex

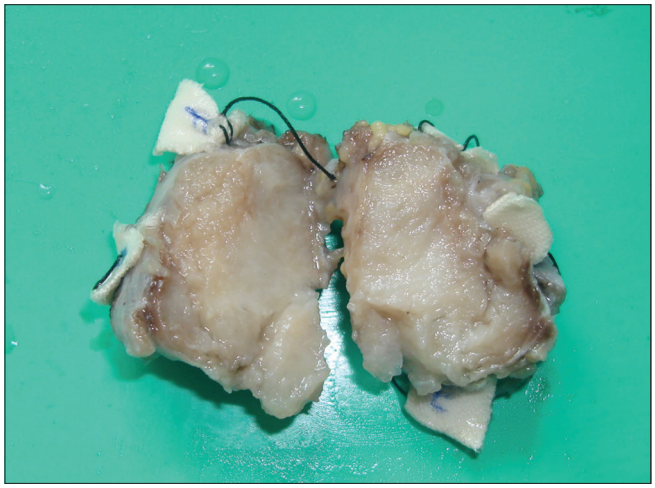

Figure 7: Cut section shows solid, gray-white mass with myxoid areas

DISCUSSION

LGFMS is a rare soft tissue neoplasm described first by Evans in 1987.[1] In his original paper, Evans had described the tumor histopathologically as a bland appearing soft tissue neoplasm associated with aggressive behavior and high degree of local recurrence or local metastasis.[1] In his second paper in 1993, Evans reported 12 cases of LGFMS, of which nine patients had local recurrence and seven patients experienced distant metastasis and died from LGFMS.[2] Folpe *et al*. in 2000, described 54 cases of LGFMS and reported that only 9% of the cases showed local recurrence and 3% showed distant metastasis.[3]

The tumor mainly affects the young and middle-aged with an age range of 20–50 years having no gender predilection.[4] The most frequent sites of occurrence of this tumor are the lower

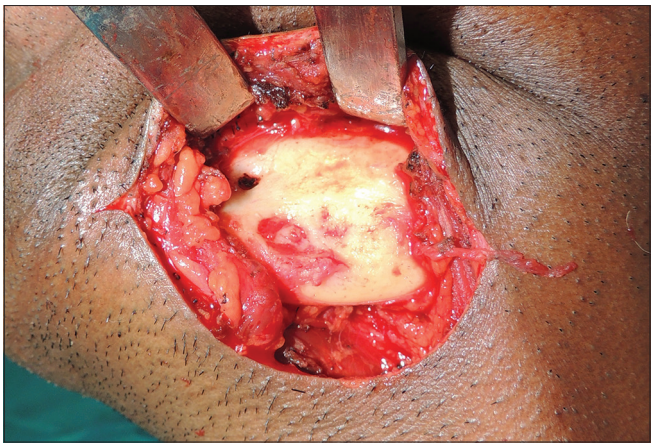

Figure 6: The mental nerve was resected at the level of the mental foramen

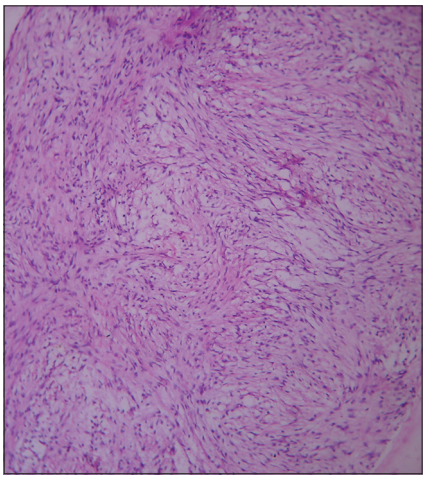

Figure 8: Bland spindle cells with no atypia in short fascicles and whorls in the myxoid zone (H&E stain, ×40)

extremities, followed by the trunk and groin, upper extremities and buttocks. LGFMS involving the maxillofacial region is a very rare entity with only six cases reported in English literature till date[4-9] [Table 1]. Our case is the seventh involving the maxillofacial region.

It is extremely difficult to make a diagnosis of LGFMS before surgical intervention because of the relatively benign clinical nature and nonspecific findings of imaging modalities such as USG, CT and magnetic resonance imaging (MRI). USG shows a mildly heterogeneous, hyperechoic mass.[5] CT usually demonstrates a well-delineated, relatively low density to isodense tumor.[5] Contrast enhanced CT shows heterogeneous enhancement, but sometimes the enhancement is not obvious, as in our case. MRI shows homogeneous signal intensity similar to muscle on T1-weighted images and heterogeneous low to high signal intensity on T_2-weighted images. Gadolinium-enhanced MRI shows heterogeneous enhancement.[5]

Morphologic and molecular overlap of hyalinizing spindle cell tumor (HSCT) with giant rosettes and sclerosing epithelioid fibrosarcomas with LGFMS suggests the possibility of considering them as variants.[10] Evans described the typical histological findings of LGFMS as contrasting fibrous and myxoid areas with moderate to low cellularity, deceptively benign-appearing spindle cells with no or slight nuclear pleomorphism and rare mitotic figures and a swirling, whorled growth pattern.[2] In addition to these features, two cases of LGFMS with heterotopic ossification and giant rosettes have also been reported.[11,12] Only incipient rosettes were seen in our case.

Although there is no specific marker for LGFMS immunohistochemistry is essential to exclude the possibility of tumors with similar histopathologic findings. MUC4 is now considered highly specific and quite sensitive marker helpful in distinguishing LGFMS from mimics.[10] Markers including S100, SMA, desmin, CD34, CD31, CD68, EMA and cytokeratin (AE1/AE3) have been used to distinguish between a number of tumors. Only vimentin is positive in all LGFMS.[13] Perineurioma is diffusely positive for EMA.[4] S100 is positive for neurofibroma whereas solitary fibrous tumor expresses CD34.[13]

In 1997, Lane *et al*. described the HSCT as a variant of LGFMS.[14] HSCT presents with varying number of large, rosette-like structures which arise from hyalinization zones or emerge abruptly from the spindled stroma. On immunohistochemistry, both the entities are strongly positive for vimentin, but there are differences between HSCT and LGFMS for other antibodies.[14] Investigators have reported that giant rosettes of HSCT are positive for S100, occasionally positive for CD34, leu-7 and neuron-specific enolase and negative for desmin, SMA and EMA.[15] In contrast, the tumor cells of LGFMS are occasionally positive for desmin, SMA, EMA and CD34 but are negative for S100, leu-7

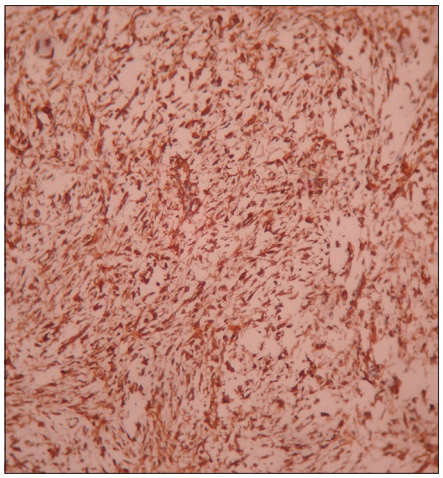

Figure 9: Positivity of vimentin in tumour cells (IHC stain, ×100)

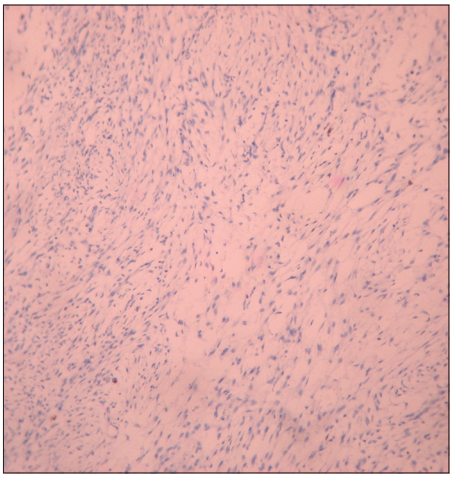

Figure 10: S100 negative in tumour cells (IHC stain, ×40)

Table 1: Reported cases of low grade fibromyxoid sarcoma in the maxillofacial region

Case number	Author	Patient age (year)/gender	Site	Tumour size (cm)	Treatment
1	Papadimitriou *et al*.[6]	4/male	Mandible	4	Curettage
2	Botev *et al*.[7]	57/female	Parotid gland	17	En bloc resection and postoperative radiotherapy
3	Wu *et al*.[8]	4/female	Angle of the jaw	Unknown	Surgical resection
4	Tang *et al*.[5]	2/male	Cheek	8	Complete resection
5	Abe *et al*.[9]	84/female	Temporal region	3	Complete resection
6	He *et al*.[4]	14/male	Cheek	8	Complete resection
7	Present case 2014	35/male	Mandible	3	Complete resection

and neuron-specific enolase. An important cytogenetic tool which will be helpful in the diagnosis of both these has been the recognition of a characteristic balanced translocation t(7; 16) (q34:p11) and the finding of a novel fusion gene FUS/CREB3 L2.[10]

Surgery is the mainstay for the treatment of LGFMS. Techniques include local excision, radical surgery, wide en bloc resection, compartmental resection.[5] The role of chemotherapy and radiotherapy as adjuncts to surgical intervention is unclear. In a study conducted by Tang *et al*. in 2010,[5] data of 273 patients diagnosed with HSCT or LGFMS were collected, of which follow-up data were available for 184 patients. Local recurrences and distant metastases were observed in 54 (29.34%) and 34 (18.48%) patients, respectively. Metastasis was seen mainly in the lung followed by other soft tissues and very rarely in bone.[5] Due to the relatively high local recurrence rate and late metastasis, long-term follow-up is essential in the management of these cases.

CONCLUSION

LGFMS is a very rare low-grade malignancy occurring in the maxillofacial region, with nonspecific histopathological findings. Diagnosis is not possible with clinical and imaging studies, rather a meticulous histopathological, immunohistochemical examination and cytogenetics is required to arrive at a diagnosis, differentiating from its mimics. Long-term follow-up is required in the management of these cases because of late metastasis and high recurrence rate.

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Conflicts of interest
There are no conflicts of interest.

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