Solitary fibrous tumor: Two cases report with a focus on the differential diagnosis

Tumor Fibroso Solitário: Relato de dois casos com foco no diagnóstico diferencial

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Abstract

Solitary fibrous tumor (SFT) is a neoplasm of fibroblastic/myofibroblastic origin with intermediate biological behavior. We report here two cases of SFT affecting an unusual anatomical site in 58-year-old and 40-year-old female patients and discuss the differential diagnosis of this lesion. In case 01, the lesion showed the clinical appearance of an asymptomatic "blister" with normal color, rubbery consistency, measuring 0.3 cm, and affected the lower lip; while in case 02, a symptomatic red nodular lesion with a soft consistency and measuring 0.5 cm affected the floor of the mouth. Excisional biopsies were performed. Microscopically, two well-delimited benign neoplasms were observed, exhibiting the proliferation of ovoid to spindle-shaped mesenchymal cells, vascular spaces with staghorn arrangement, and the absence of mitosis figures. Immunohistochemistry was performed in case 01 to assist in the diagnosis. Weak and diffuse immunostaining was observed for α-SMA and intense and diffuse immunopositivity for Bcl-2 and CD34. Based on histopathological and immunohistochemical features, a diagnosis of SFT was rendered in both cases. The low occurrence and nonspecific clinical features of oral SFT may make its clinical diagnosis difficult. Also, morphological and immunohistochemical are essential for differential diagnosis with other mesenchymal neoplasms.

Keywords: Solitary fibrous tumor; Oral cavity; Oral Pathology; Differential diagnosis

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Introduction

Solitary fibrous tumor (SFT) is a relatively uncommon neoplasm of fibroblastic/myofibroblastic origin, which exhibits intermediate biological behavior [1, 2, 3,4]. It is estimated that SFT diagnosed in the head and neck region corresponds to about 6% of all SFT and that this tumor represents 3% of the mesenchymal neoplasms of the oral cavity [1, 2]. Clinically, it is observed at a higher frequency in female patients in the sixth decade of life; besides, the buccal mucosa and the tongue are the most affected anatomical sites, [1-4,] and only eight cases of labial SFT are reported in the literature [2].

Histopathological examination is essential for the diagnosis of SFT. Microscopically, it is a circumscribed neoplasm with hyper and hypocellular areas and myxoid or dense fibrous stroma. The neoplastic cells show ovoid to spindle-shaped with occasional mild nuclear atypia and may display a storiform, fascicular, or disorderly proliferation pattern. Also, staghorn-shaped blood vessels and areas of hyalinization are frequently observed [1, 2, 5-7]. Immunohistochemistry may be used in challenging cases where histopathological features are insufficient to establish the diagnosis, such as the neoplastic cells immunopositive for Bcl-2, CD34, CD99, and STAT6 [1, 2, 5-7]. Thus, our objective is to report two cases of SFT in unusual anatomic sites and discuss the morphological and immunohistochemical differential diagnosis of this lesion.

Case Reports

Case 01

A 58-year-old female patient complained about an asymptomatic “blister” on the lower lip. In the anamnesis, the patient reported that the lesion had 7 months of duration and frequently showed recurrent swelling with spontaneous resolve. Her medical history was not contributory. In the intraoral clinical examination, a normal color lesion with a rubbery consistency measuring 0.3 cm was observed on the inner mucosa of the lower lip. In this context, the clinical hypothesis of mucocele was established, and an excisional biopsy was performed under local anesthesia. The microscopic examination revealed a benign neoplasm of mesenchymal origin, well delimited by a fibrous connective tissue capsule (Figure 1A). The mesenchymal neoplastic cells showed ovoid to spindle-shaped morphology and a pale nucleus. These cells exhibited a predominantly solid proliferative pattern (Figure 1B-D). Also, it was observed the presence of vascular spaces with staghorn arrangement (Figure 1C-D). Stroma consisted of connective tissue of variable density with the presence of mild chronic inflammatory infiltrate.

Due to the morphological features, immunohistochemistry with α-SMA (DAKO; clone:1A4; 1:500), Bcl-2 (DAKO; clone: 124; 1:100), and CD34 (Cell Marque; clone: QBEnd/10; 1:200) was carried out to perform the differential diagnosis between SFT and a smooth muscle neoplasm. The mesenchymal cells exhibited weak and diffuse cytoplasmic immunostaining for α-SMA (Figure 2A), intense and diffuse cytoplasmic immunostaining for Bcl-2 (Figure 2B), as well as intense and diffuse

membrane immunostaining for CD34 (Figure 2C). Thus, the final diagnosis of SFT was established, and the patient did not show signs of recurrence after 18 months of follow-up.

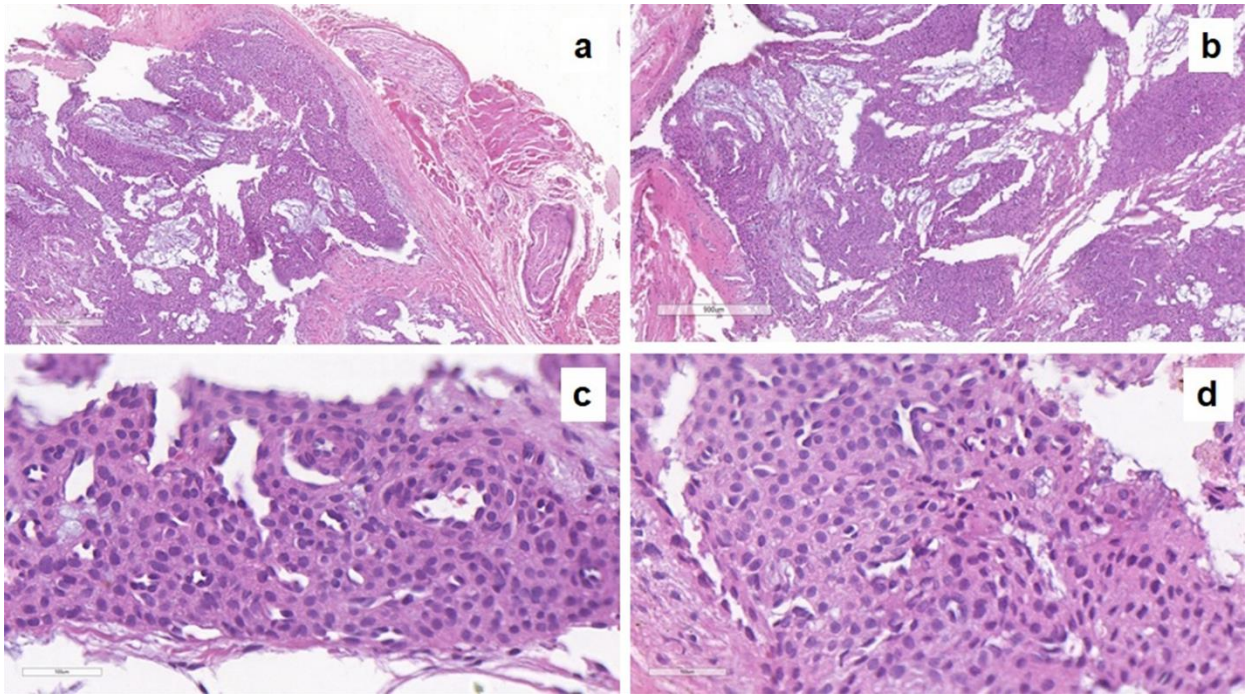

Figure 1. Histopathologic features of solitary fibrous tumor (hematoxylin and eosin). **(A)** Lesion well-delimited by fibrous connective tissue capsule (scale bar: 700μm). **(B)** Hypercellular area with a predominantly solid proliferative pattern and blood vessels with staghorn arrangement (scale bar: 900μm). **(C and D)** Hypercellular area showing ovoid to spindle-shaped mesenchymal cells, sometimes exhibiting pale nuclei, and blood vessels with staghorn arrangement (scale bars: 100μm).

Case 02

A 40-year-old female patient complained about symptomatic swelling under the tongue. In the anamnesis, the patient's medical history was not contributory. During the intraoral clinical examination, a red nodular lesion with a soft consistency measuring 0.5 cm was observed on the floor of the mouth. Due to the lesion's clinical aspect, the inflammatory fibrous hyperplasia hypothesis was established, and an excisional biopsy was performed under local anesthesia.

The histopathological examination revealed a well-delimited benign neoplasm of mesenchymal origin. The ovoid to spindle-shaped mesenchymal neoplastic cells exhibited pale nuclei and showed a predominantly storiform proliferative pattern. It was noticed the presence of vascular spaces with staghorn arrangement as well as the absence of mitosis figures. Stroma consisted of dense connective tissue, which showed the presence of mild chronic inflammatory infiltrate. According to the microscopic features, the final diagnosis of SFT was established. The patient is still under clinical follow-up and did not show signs of recurrence after 6 months of the excision of the lesion.

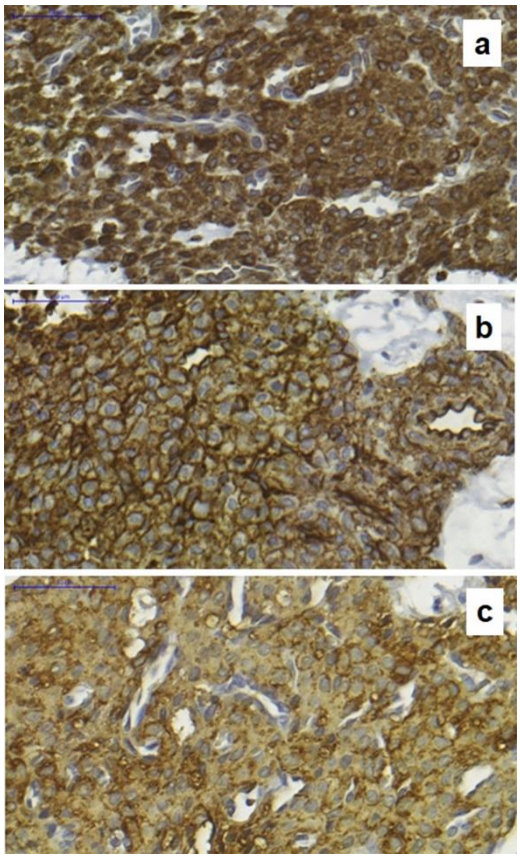

Figure 2. Immunohistochemical findings of solitary fibrous tumor. **(A)** Weak and diffuse cytoplasmic immunostaining of the neoplastic cells for α-SMA (scale bar: 50μm). **(B)** Intense and diffuse cytoplasmic immunostaining of the neoplastic cells for Bcl-2 (scale bar: 50μm). **(C)** Intense and diffuse membrane immunostaining of the mesenchymal and endothelial cells for CD34 (scale bar: 50μm).

Discussion

SFT is a neoplasm with intermediate biological behavior. However, it seems more indolent in the oral cavity since it shows low local recurrence rates and metastasis [2, 4, 5]. Besides, oral SFT has nonspecific clinical features. Thus, it may present as an asymptomatic, well-delimited submucosal nodule and clinically resemble other lesions [1, 2, 8]. Corroborating the findings of a recent systematic review of oral SFT [2], the cases reported here occurred in two adult female patients and affected unusual anatomical sites. Due to the clinical characteristics, our cases were clinically diagnosed as mucocele and inflammatory fibrous hyperplasia. This fact highlights that oral SFTs may perform clinical differential diagnosis with several lesions, including those of salivary gland and reactive/inflammatory origin [2, 6].

Given the nonspecific clinical presentation, a microscopic examination is necessary. As reported in the literature [1, 2, 9], we observed an encapsulated lesion with a solid pattern proliferation of ovoid and spindle mesenchymal cells, as well as a stroma of connective tissue and blood vessels exhibiting

staghorn arrangement. Some morphological features such as high mitotic rates, nuclear pleomorphism, and high cellularity have been related to lesions with an increased risk of recurrence [6]. We believed that the present case has a favorable prognosis since it was observed mild nuclear pleomorphism (anisocytosis and anisonucleosis) and the absence of mitosis figures were observed (mitotic figures were assessed in 10 fields at the highest magnification [400×]). At the same time, frequently, the morphological characteristics are not sufficient to establish the definitive diagnosis of SFT since it may show histopathological similarity with other mesenchymal neoplasms, such as neurofibroma, schwannoma, myofibroma, leiomyoma, and nodular fasciitis [10-12]. Thus, there is often a necessity to analyze the immunohistochemical aspects [6, 10-12].

Neural benign neoplasms such as neurofibroma and schwannoma with Antoni B pattern may show clinical, histopathological, and immunohistochemical features similar to SFT [12]. Generally, these lesions exhibit the presence of a connective tissue capsule and interlocking bundles of spindle-shaped cells displaying wavy nuclei associated with delicate collagen fibers as well as immunopositivity to the S-100 protein [10]. Thus, the absence of these neural tissue morphological features allows the exclusion of these diagnosis hypotheses in both cases presented here.

TFS may exhibit focal areas with smooth muscle-like cells. In this way, SFT also performs differential diagnosis with myofibroma because it may assume a myofibroblastic phenotype. Besides, myofibroma is currently considered a perivascular myoid neoplasm belonging to the same morphological spectrum as myopericytoma [7], 10. Despite this, the diagnosis may be performed by immunohistochemical analysis. On the other, leiomyoma is characterized by the proliferation of spindle-shaped smooth muscle cells with a blunt-ended or cigar-shaped nucleus in an interlacing fascicular pattern [12,13]. Besides, leiomyoma neoplastic cells have immunopositivity for α-SMA and show negative immunostaining for Bcl-2 and CD34 12,13. Thus, as in case 01, the differential diagnosis between TFS and leiomyoma can be performed through immunohistochemical analysis with Bcl-2 and CD34.

Nodular fasciitis (NF) is a pseudosarcomatous lesion of fibroblastic/myofibroblastic origin that performs differential diagnosis with SFT. This lesion is characterized as spindle-shaped cell proliferation in a stroma rich in collagen and mucinous areas with a “feathered” appearance [14]. Given the morphological similarity between SFT and NF, immunohistochemistry can assist this diagnosis since the SFT mesenchymal cells exhibit immunopositivity for CD34 and STAT6, while NF shows negative immunoreaction for these proteins [7, 10, 14].

Overall, similar to the cases reported by Greenall et al. [15] (2014), Hirano et al. [16] (2001), and Li et al. 17, our immunohistochemical analysis revealed weak α-SMA immunoreactivity as well as intense immunostaining for Bcl-2 and CD34. These findings, in association with the histopathological features observed, allowed the final diagnosis of SFT in case 01. Also, the microscopical features of case 02 were sufficient to establish the histopathological diagnosis.

Conclusion

In summary, the diagnosis difficulty of SFT in the oral cavity is set up due to its low occurrence and nonspecific clinical features. Also, due to STF morphological similarity with other mesenchymal neoplasms, immunohistochemistry may be necessary to perform the differential diagnosis. Although oral SFT shows low rates of recurrence and metastasis, a long-term follow-up must be performed since it exhibits intermediate biological behavior.

Resumo

O tumor fibroso solitário (TFS) é uma neoplasia de origem fibroblástica/miofibroblastica com comportamento biológico intermediário. Nesse artigo relatamos dois casos de TFS afetando sítios anatômicos incomuns em pacientes do sexo feminino de 58 anos e 40 anos e discutir os seus diagnósticos. No caso 01 clinicamente a lesão apresentou um aspecto de "bolha" assintomática, coloração normal da mucosa, consistência borrachoide medindo 0,3 cm, em região de lábio inferior, enquanto que no caso 02, como uma lesão sintomática, vermelha, nodular com consistência mole e medindo 0,5 cm afetando o assoalho bucal. As biópsias excecionais foram realizadas. Microscopicamente, observamos duas lesões neoplásicas bem delimitadas exibindo uma proliferação de células mesenquimais variando de ovoides a fusiformes, vasos sanguíneos em formato de "chifre de veado", com ausência de figuras de mitoses. No caso 01 foi realizado análise imuno-histoquímica para auxiliar no diagnóstico. Foi observado uma marcação fraca e difusa de α-SMA e uma intensa e difusa imunopositividade para o Bcl-2 e CD34.Baseado nos achados histopatológicos e imuno-histoquímicos o diagnóstico de TFS foi estabelecido em ambos os casos. A baixa ocorrência e os achados clínicos inespecíficos do TFS oral podem dificultar o diagnóstico clínico. Além disso, as análises morfológicas e imuno-histoquimicas são essenciais para realização do diagnóstico diferencial com outras neoplasias mesenquimais.

Palavras-chave: Tumor fibroso solitário; cavidade bucal; Patologia Oral; Diagnóstico Diferencial

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