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Necrotizing sialometaplasia: A report of two cases and review of the literature

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SUMMARY

Necrotizing sialometaplasia (NS) affects salivary glands, and despite being a benign condition, its clinical and histopathological features sometimes mimic other malignant pathologies of epithelial origin. This article presents two cases of NS and discusses clinicopathological features and the differential diagnosis of this condition. The first case, a 76-year-old woman with a 6-month history of painful oral thrush. Intraoral examination showed an ulcerative lesion located on the hard palate. The clinical hypothesis was squamous cell carcinoma. Second, a 26-year-old man with a 40-days ulcerative lesion on the soft palate. Intraoral examination revealed a reddish ulcer measuring 0.5 cm. Clinical hypothesis was traumatic ulcer. In both cases, a biopsy was performed, and a histopathological diagnosis of NS was established. NS cause is poorly understood, and its clinical features resemble other oral lesions with ulcerative aspects. Thus, dentists must be aware of the clinical features of oral ulcers with more than a 2-week duration without defined etiology.

Key words: necrotizing sialometaplasia, salivary glands, differential diagnosis.

INTRODUCTION

Necrotizing sialometaplasia (NS) is a benign inflammatory condition that generally affects the minor salivary glands of the palate (1). The lesion is thought to be caused by vascular ischemia triggered by factors such as trauma, smoking, and alcoholism (2).

Clinically, NS manifests as an ulcerative lesion that may resemble malignant neoplasms affecting this anatomical site, a fact that renders its diagnosis particularly challenging for dentists (1, 2). The aim of this study was to report two cases of NS and to discuss the clinical-pathological characteristics and differential diagnosis of this condition.

CASE REPORT

This study was conducted in full accordance with the ethical principles of the World Medical Association Declaration of Helsinki.

Case 1

A 76-year-old female patient was seen at the Department of Dentistry of the Federal University of Rio Grande do Norte (UFRN) with a 6-month history of painful oral thrush. Her medical history revealed no noteworthy systemic condition. Intraoral physical examination showed an ulcerative and sanguineous erythematous lesion measuring approximately 3 cm that was located on the right side of the hard palate (Figure 1). The diagnostic hypothesis based on the clinical features was oral squamous cell carcinoma. An incisional biopsy was performed, and microscopic examination revealed oral mucosa lined with parakeratinized stratified squamous epithelium exhibiting hyperplasia of the basal layer, pseudoepitheliomatous hyperplasia, and some cells with individual keratinization. The lamina propria composed of dense fibrous connective tissue showed foci of moderate mononuclear inflammatory infiltration and scarce vascularization. The histopathological diagnosis was NS. Remission of the lesion was observed after 2 weeks.

Case 2

A 26-year-old male patient sought the Department of Dentistry of UFRN complaining of an asymptomatic ulcerative lesion that had appeared

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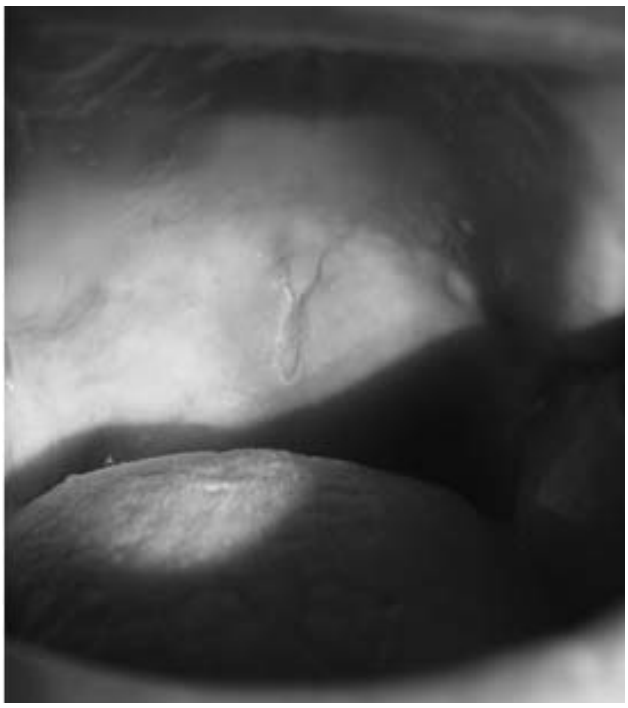

Fig. 1. Clinical Aspect – ulcerative and erythematous lesion on the right side of the hard palate

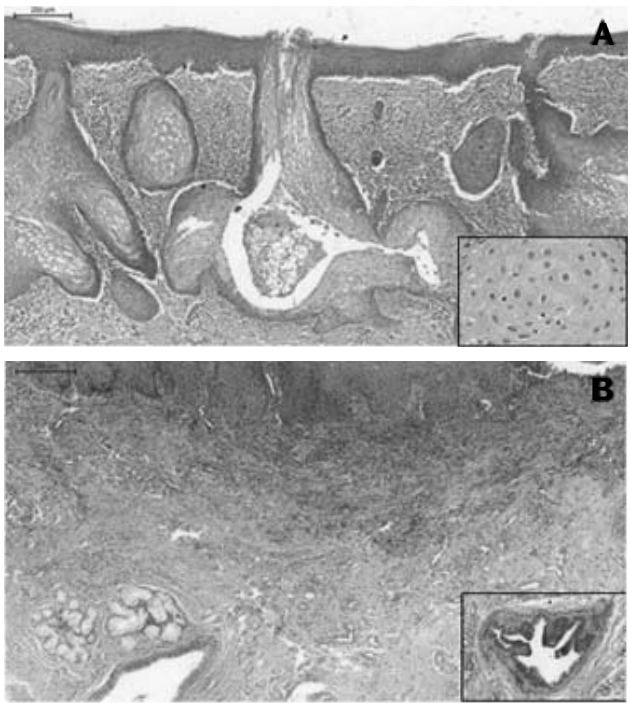

Fig. 2. Microscopic Features (Hematoxylin and eosin). A Parakeratinized stratified squamous epithelium exhibiting hyperplasia of the basal layer and, pseudoepitheliomatous hyperplasia with normal keratinocytes. (B) Connective tissue exhibiting foci of moderate mononuclear inflammatory infiltration, mucous acini and salivary duct presenting squamous metaplasia. (Bars Indicate 200 μm).

40 days earlier. His medical history was uneventful. Intraoral physical examination revealed a reddish ulcer measuring 0.5 cm in diameter located on the soft palate. Under the clinical suspicion of a traumatic ulcer, an excisional biopsy was performed, and the histopathological report stated the presence of salivary gland parenchyma exhibiting foci of acinar degeneration, as well as ductal squamous metaplasia and foci of mucus extravasation. The diagnosis was NS. Surgery resulted in the complete remission of the lesion.

DISCUSSION

Necrotizing sialometaplasia is a benign, self-limiting inflammatory condition that mainly affects the minor salivary glands of the hard and soft palate. Involvement of the major salivary glands is rare, and the parotid gland is the most commonly affected site (3, 4). The etiology of NS may be associated with ischemia of glandular tissues that causes necrosis of the involved gland and ulceration of the adjacent oral mucosa (5). When this lesion occurs at anatomical sites that do not involve the salivary glands, such as skin, lung, or breast, it is called syringometaplasia or adenometaplasia (6, 7).

The pathogenesis of NS is not yet fully understood, but the theory of local ischemia caused by trauma that would interrupt the blood supply to the salivary gland lobes is the most accepted. Trauma resulting from dental procedures, especially anesthesia with vasoconstrictors, is the most commonly indicated cause of this ischemia (3, 8). Traumas caused by ill-fitting dentures or other direct mechanical traumas can also trigger NS (9, 10). Bulimia is currently recognized as a factor predisposing to NS, possibly due to the combination of the mechanical induction of vomiting and the chemical damage caused by the low pH of gastric content (2, 6, 7).

In case 1, the patient used an ill-fitting full upper denture that caused trauma to the area where the ulceration was found. The origin of the lesion was attributed to this factor. We performed a review of cases of NS published in PubMed (2015-2020) using the following search strategy: (Sialometaplasia, Necrotizing [MeSH Terms]) AND (Case Reports [Publication Type]). Also, the reference lists of potentially eligible articles were manually searched. In this way, 13 publications were included. When analyzing the included publication, we did not identify any case that demonstrated ill-fitting dentures as a local factor trauma. The reported cases were generally associated with dental procedures or the cause was unknown (Table 1).

Some factors unrelated to mechanical trauma such as smoking, alcoholism, and cocaine use have also been associated with the development of NS (2, 4, 5). In this case, the pathogenesis would be the

Table 1. Cases of necrotizing sialometaplasia described in the last 5 years *(PubMed)*

Authors	Lesions	Gender/ Age (year)	Etiological Factor	Size (cm)	Symptoms	Anatomic Site	Clinical Aspect/Diagnostic Hypothesis	Biopsy
Abdalla-Aslan *et al.*, 2020	Bilateral	M/20	Anabolic androgenic steroids abuse/ Smoking	1.5 each	Pain	Hard palate	Ulceration/Necrotizing sialometaplasia	Incisional
Shin *et al.*, 2020	NI	NI	Orthodontic proshesis	NI	Pain, discomfort	Hard palate	NI/Malignancy	Resection
	NI	NI	Absent	NI	Mass sensation	Hard palate	NI/Odontogenic abscess	Resection
	NI	NI	Absent	NI	Absent	Hard palate	NI/Benign lesion	Biopsy
	NI	NI	Surgery	NI	Fever	Hard palate	NI/Inflammation	Biopsy
Zhurakivska *et al.* 2019	NI	F/60	Trauma (prosthesis)	NI	NI	Hard palate	Ulceration/NI	NI
	NI	M/58	Trauma (prosthesis)	NI	NI	Hard palate	Ulceration/NI	NI
	NI	M/29	Acute inflammation of the upper respiratory tract	NI	NI	Hard palate	Ulceration/NI	NI
	NI	F/44	Tumor growth	NI	NI	Hard palate	Ulceration and swelling/NI	Excisional
	NI	F/36	Tumor growth	NI	NI	Hard palate	Ulceration/NI	NI
	NI	F/68	Unidentified cause	NI	NI	Soft palate	Ulceration/NI	NI
	NI	F/61	Unidentified cause	NI	NI	Tongue, lateral border	Ulceration/NI	NI
	NI	M/62	Unidentified cause	NI	NI	Floor of the mouth	Ulceration/NI	NI
	NI	M/45	Surgical trauma (FNAB) and/or tumor growth	1.5	NI	Parotid gland	Parotid gland swelling; slow growth; no facial nerve palsy/NI	Parotidectomy
	NI	M/51	Surgical trauma (FNAB) and/or tumor growth	2.2	NI	Parotid gland	Parotid gland swelling; slow growth; no facial nerve palsy/NI	Parotidectomy
	NI	M/63	Surgical trauma (FNAB) and/or tumor growth	3.0	NI	Parotid gland	Parotid gland swelling/ NI	Parotidectomy
	NI	M/27	Surgical trauma (FNAB) and/or tumor growth	4.3	NI	Parotid gland	Parotid gland swelling/ NI	Parotidectomy
Swarup *et al.* 2018	Unilateral	F/38	Smoking	1.2×1.4	Pain	Mid palatine raphae	Ulcer/NI	Excisional
Haen *et al.* 2017	Unilateral	M/56	Anticoagulants usage	4.0	Pain and secretion	Left parotid	Parotid Inflammation/ Mucoepidermoid Carcinoma	Two incisional biopsies
Gatti *et al.* 2016	Unilateral	F/47	Flurbiprofen spray usage	2.0	Pain when swallowing	Hard palate	Ulcer and bone exposition/NI	Incisional
Kandula *et al.* 2016	Bilateral	M/38	Unidentified cause	1.1 each	Asymptomatic	Palate (Close to 16 and 26)	Swelling and ulceration/ Necrotizing sialometaplasia	Incisional
Kumar *et al.* 2016	Unilateral	M/46	Unidentified cause	0.5	Pain	Vermilion lower lip	Ulcer/Malignant lesion	Incisional
Rushinek *et al.* 2016	Unilateral	F/49	Recurrent vomiting	2.0	Pain	Palate	Nodule and ulceration/Necrotizing sialometaplasia	Incisional
Senapati *et al.* 2016	Unilateral	M/53	Unidentified cause	NI	Pain	Hard palate	Ulcer/Fungal cellulitis	Incisional
	NI	M/62	Unidentified cause	NI	Pain	Anterior third of the tongue	Ulcer/Squamous cell carcinoma	Incisional
Balaji *et al.* 2015	Unilateral	M/28	Recent tooth extraction	3.0×4.0	Pain	Hard palate	Ulcer/NI	Incisional
Jeong et al, 2015	Unilateral	F/36	Endodontic treatment/Smoking	3.0	Asymptomatic	Hard palate	Swelling and ulceration/ Necrotizing sialometaplasia	Incisional
Ledesma-Montes *et al.* 2015	Bilateral	M/37	Unidentified cause	1.5×3.0/ 5.6×3.8	Pain	Palate	Ulcer/Carcinoma	Incisional
Shetty *et al.* 2015	Unilateral	F/35	Recent tooth extraction	1.0×0.5	Mild pain	Hard palate	Nodule and ulceration/Salivary gland benign lesion	Excisional

Abbreviation: NI, not informed.

same as that related to reduced mucosal blood flow, ischemia, necrosis, and ulceration (5, 11). However, neither patient in this study reported the use of tobacco, alcohol, or any other drug. In case 2, no factor related to the development of NS could be identified, corroborating the findings of other authors who attributed this disease to idiopathic causes.

In general, NS manifests as a well-circumscribed ulcerative lesion with hardened borders, which can be symptomatic or asymptomatic. It usually occurs on only one side of the hard palate and/or junction with the hard/soft palate (5). Microscopic examination of NS reveals lobular necrosis and squamous metaplasia of ducts and acini, with preservation of the lobular architecture of the glandular structures. In addition, the epithelium may contain areas of pseudoepitheliomatous hyperplasia in which the epithelial cells exhibit benign morphological features (Figure 2A) (7). The necrotic areas may exhibit extensive mucin regions surrounded by an inflammatory infiltrate, which can also be found inside and/or in areas adjacent to the metaplastic ducts (Figure 2B) (1, 6, 12).

The clinical features of NS observed in the cases reported here agree with the classical characteristics of this disease described in the literature (1, 13). However, these features resemble those of other ulcerative conditions of the mouth, including squamous cell carcinoma (1, 5). In case 1, based on the clinical features, age of the patient, and duration of the lesion, the diagnostic hypothesis was squamous cell carcinoma, and an incisional biopsy was performed for diagnostic purposes. However, the histopathological report showed features of an inflammatory condition without malignancy. In some cases of NS, the histopathological findings may indicate squamous metaplasia of the salivary ducts that can be confused with squamous cell carcinoma or even with mucoepidermoid carcinoma (5, 10).

Another differential diagnosis of NS is traumatic ulcer, which was the diagnostic hypothesis in case 2. In this case, the hypothesis of malignancy was not raised mainly because of the clinical features of the lesion. However, considering the duration of the lesion of 40 days, a biopsy was performed that revealed NS.

Other lesions can also clinically resemble NS, such as tuberculosis, syphilis, T-cell lymphoma, Wegener's genulomatosis, and zygomycosis. However, the distinction should be made based on the clinical history and complementary laboratory tests (5, 10).

Treatment is generally not needed for NS since the lesion regresses after the removal of the predisposing factor. However, a biopsy is indicated to rule out malignancy, as done in the present cases. Local debridement may be performed in cases of very extensive ulcerative lesions to accelerate the healing process (5). Some authors recommend measures for pain relief, including the prescription of analgesics, and the application of chlorhexidine gel to the affected area to prevent secondary infection (2).

CONCLUSION

Necrotizing sialometaplasia is a relatively rare lesion whose cause is poorly understood. Its clinical characteristics resemble those of other ulcerative lesions in the mouth, especially squamous cell carcinoma. The present cases are similar to those reported in the literature. Thus, the professional must be aware of the clinical features of oral ulcers with a duration of more than 2 weeks and without defined etiology, highlighting the importance of a biopsy to rule out malignancy.

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