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Oral traumatic granuloma: report of a case and review of literature

REVIEW ARTICLE

Bobby K. Joseph, Devipriya BairavaSundaram

Department of Diagnostic Sciences, Faculty of Dentistry, Kuwait University, Safat, Kuwait

Correspondence to: Bobby K. Joseph, Department of Diagnostic Sciences, Faculty of Dentistry, Kuwait University, PO Box 24923, Safat 13110, Kuwait
Tel.: 00965 24986694
Fax: 00965 25326049
e-mail: bobby@hsc.edu.kw

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Abstract – Traumatic granuloma is an uncommon condition considered to be a benign, reactive lesion that usually affects the tongue. The exact pathogenesis implicated in the development of this lesion is not clear. However, trauma has been found to be a contributing factor in a majority of the cases. Clinically, it often presents as an ulceration or an indurated submucosal mass. Microscopically, it is characterized by a diffuse polymorphic cell infiltrate composed predominantly of eosinophils extending deep into the submucosa causing degeneration of the underlying muscle. Recognition of the lesion is important because it often mimics oral squamous cell carcinoma. But traumatic granuloma is self-limiting and tends to resolve spontaneously. This paper describes a case of traumatic granuloma on the dorsal surface of tongue in a 62-year-old woman. The clinical aspects, pathogenesis and histopathology of this uncommon lesion are discussed with an emphasis on its benign, self-limiting nature.

Traumatic granuloma (TG) was originally described clinically by Riga (1) and histologically by Fede (2). The term 'Traumatic ulcerative granuloma with stromal eosinophilia' (TUGSE) was coined by Elzay in 1983, referring to a chronic but self-limiting reactive ulcer of the oral mucosa (3). This lesion has been known in the oral pathology literature by different names. In infants, this lesion has been called Riga–Fede's disease, sublingual ulcer, sublingual granuloma and reparative lesion of the tongue (3). Moreover, similar clinical characteristics and identical histological features have been reported as ulcerated granuloma eosinophilicum diutinum (4), traumatic granuloma of tongue (5), eosinophilic granuloma of tongue (6), eosinophilic ulcer of tongue (7), traumatic eosinophilic granuloma (8) and ulcerative eosinophilic granuloma of the tongue (9).

Clinically, it presents, most commonly, as an ulcer or sometimes as a raised and indurated submucosal mass. The tongue is the most commonly affected site (60% of lesions) although other areas such as lip, palate, gingiva, vestibular mucosa and floor of the mouth may also be involved (10–12). It can be asymptomatic or occasionally associated with pain. A wide age range of patients are affected, from childhood to old age. Both the sexes are equally affected. The lesion is usually unifocal, though multi-focal lesions and recurrences have been reported (12–16).

Here, we report a case of traumatic granuloma as an indurated submucosal mass on the dorsal surface of the tongue and also emphasize its benign nature. This lesion is rare and may be easily mistaken for a cancer or microbial infection. The clinician's awareness of this entity is important to deliver effective treatment.

Case report

A 62-year-old woman was referred from a private dental hospital to the Oral Medicine clinic of Kuwait University with a 2-week history of a painful swelling on the left mid-dorsum of the tongue. The patient recalled a previous history of self-bite on the affected tongue. Her medical history was relevant in that she had insulin-dependant diabetes mellitus, hypertension, ischemic heart disease, osteoporosis and degenerative joint disease and was under the care of a medical practitioner.

Examination revealed a firm, tender, erythematous and oedematous lesion of 2.5 cm in diameter on the left mid-dorsum of the tongue (Fig. 1). The lesion was extremely painful and the patient had difficulty in protruding the tongue. There was no fixation to the deeper structures or any regional lymphadenopathies. Her orthopantomograph (OPG) revealed no significant radiological findings. An incisional biopsy was performed under local anesthesia for histopathological diagnosis.

Microscopic examination showed hyperplastic epithelium with hyperchromatism of the basal cell layer of the epithelium and occasional mitoses (Fig. 2). However these changes were considered reactive rather than neoplastic. The lamina propria contained a mixed chronic inflammatory cell infiltrate. Eosinophils were also seen in the lamina propria with a few scattered histiocytes, lymphocytes and mast cells. The infiltrated tissue was well vascularized. The inflammatory infiltrate extended deep into the musculature of the tongue with evidence of degeneration of muscle fibers (Fig. 3). No atypical cells or signs of granulomatous infiltration were seen. The patient was advised to use chlorhexidine (0.2%) mouthwash and complete healing was noticed after 1 week (Fig. 4). No further treatment was required other than regular observation and routine check-ups.

Discussion

Traumatic granuloma is a rare clinicopathological entity with unknown etiology, although a relation with trauma

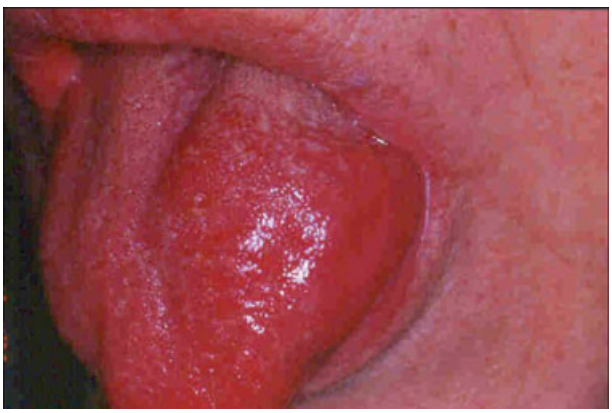

Fig. 1. Submucosal mass on dorsum of the tongue.

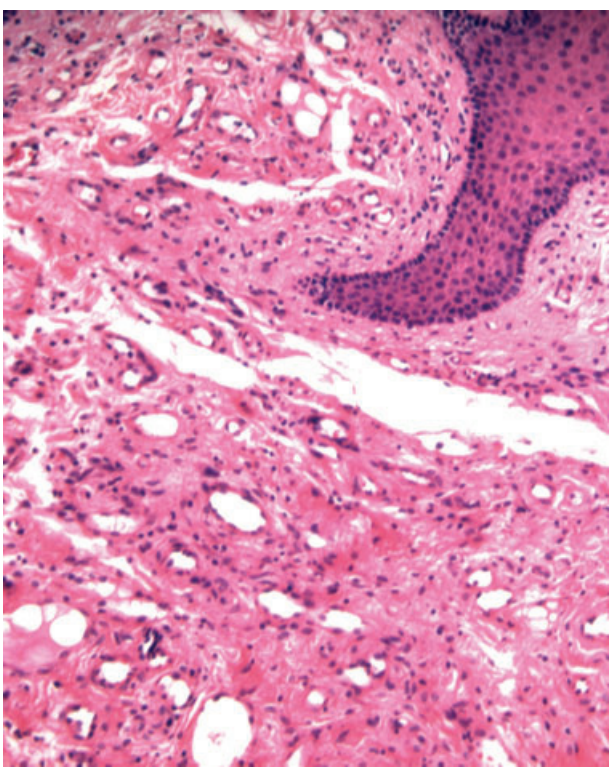

Fig. 2. Low power photomicrograph shows hyperplastic epithelium, inflammatory cell infiltrate and increased vasculature (hematoxylin–eosin stain; original magnification 20 ×).

has been proposed by many authors. Experimental studies with rats demonstrated similar lesions after repeated injury to the tongue (5). Others have suggested that trauma is only a contributing factor in the development of TG that could lead to viral or toxic agents entering the underlying tissue to cause an inflammatory response (9). However, trauma is identified in less than 50% of cases. In the present case, trauma caused by sudden biting might have been a contributing factor.

Clinically, most of them appear ulcerated, but cases with indurated swelling are also reported. It is possible that indurated lesions represent an earlier phase in the development of the typical ulcer (17). Table 1 illustrates

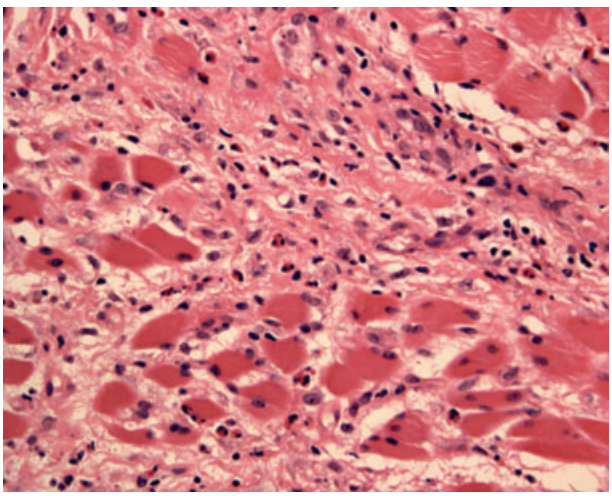

Fig. 3. Histologic examination reveals mixed chronic inflammatory cell infiltrate with eosinophils which extends to the musculature (hematoxylin–eosin stain; original magnification 40 ×).

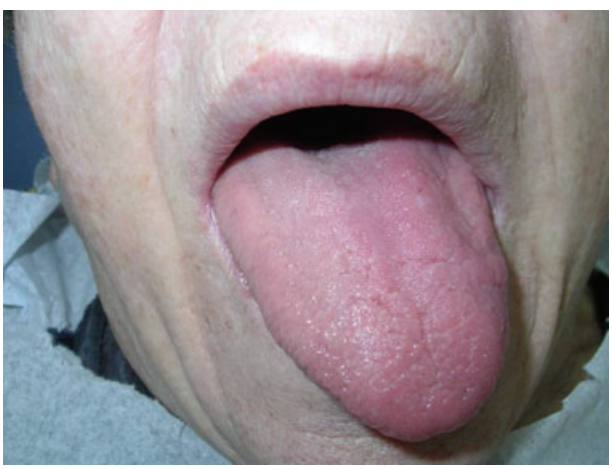

Fig. 4. Complete resolution of lesion after 1 week.

the clinical features of the main series of traumatic granuloma published in the literature (3, 5, 17–21). The present case highlights the importance of a correct diagnosis of indurated lesions. The clinical presentation mimics that of oral cancer and the differential diagnosis may also include traumatic neuroma, granular cell myoblastoma, lymphoma, lymphangioma, salivary gland tumors and metastatic tumors.

Histopathological findings of traumatic granuloma are characteristic and consist of an eosinophil-rich mixed inflammatory infiltrate accompanied by a population of large mononuclear cells whose origins have been a matter of debate. The infiltrate is usually dense and extends deep between muscle fibers. The presence of histiocytes often confounds the histologic evaluation and has occasionally led to the erroneous diagnosis of a lymphohistiocytic lesion (22).

The histologic differential diagnosis may include many lesions that exhibit significant numbers and infiltration of eosinophils within the connective tissue

Table 1. Clinical features of reported cases of traumatic granuloma in the literature

Author	Number of cases	Mean age	Sex (M:F)	Clinical features	Most frequent site of occurrence
Bhaskar & Lilly (5)	7	37	2.5:1	Ulceration	Tongue
Elzay (3)	41	58	1:1	Ulceration, indurated lesion	Tongue, buccal mucosa
Doyle et al. (18)	15	62	1.1:1	Ulceration	Tongue, buccal mucosa
El-mofty et al. (17)	38	57	1:1.5	Ulceration, indurated lesion, red lesion	Tongue
Regezi et al. (21)	8	59	1:3	Ulceration, nodule	Tongue
Garcia et al. (19)	11	62	1:1.2	Ulcers	Tongue
Hirshberg et al. (20)	12	49	1:1	Ulceration, exophytic mass	Tongue, buccal mucosa

such as Langerhan's cell disease, angiolymphoid hyperplasia with eosinophilia, Kimura disease, certain types of lymphomas, allergic reactions and parasitic diseases (23).

In 1983, Elzay (3) reported 41 cases of this condition. The increased numbers of mast cells suggested that interactions between mast cells and eosinophils might play a pathogenetic role. The distribution of eosinophils in tissues is influenced by local chemotactic factors, some of which are derived from lymphocytes and mast cells. The eosinophils cause tissue damage during this interaction.

Doyle et al. (18) reviewed 15 cases and suggested a possible relationship to other systemic and oral diseases and that the lesion may be related to eosinophil-containing lesions of other organs.

The second largest series of reports by El-Mofty et al. in 1993 with 38 cases (17) concluded that cell-mediated immunity might play an important role in the pathogenesis. Immunohistochemical studies revealed numerous T-cell specific antigen-presenting cells. They suggested that recurrent trauma leads to alteration of tissue antigens or introduces microbial products into the tissues; either event could incite a local immune reaction. Activated T lymphocytes produce numerous lymphokines which include IL-1, IL-5 and TNF which act as eosinophil-chemotactic agents. IL-5 is essential for maturation of eosinophils and is also involved in the differentiation of mast cells. Thus release of IL-5 might recruit mast cells in these lesions. Degeneration and necrosis of muscle, epithelial and endothelial cells might be caused by either degeneration of cytotoxic T-cells or by the toxic products of eosinophils. The histiocytes were positive for vimentin and hence they suggested that these cells might be related to myofibroblasts and that they might play a role in the reparative phase of the lesion.

Regezi et al. (21) characterized the cellular infiltrate in these lesions and concluded that T-lymphocytes, CD68–positive cells (macrophages) and XIIIa positive cells (oral counterparts of dermal dendrocytes) and eosinophils were particularly prominent.

Elovic et al. (24) showed a lack of significant synthesis of transforming growth factor by eosinophils, which can explain the delayed healing characteristics of traumatic granuloma.

Ficarra et al. (25) first hypothesized a possible lymphoproliferative origin on the basis of clinical and histological findings. Alobeid et al. (26) supported this feature by immunohistochemical and PCR analysis. Segura et al. (27) suggested that TG can represent another histological simulator of CD30 + lymphoproliferative disorders. Hirshberg et al. (20) characterized the phenotypic and genotypic profile of TG. They suggested that most cases of TG are reactive while some may harbor a dominant clonal T-cell population. Segura & Pujol (28) reviewed eosinophilic ulcer of the oral mucosa and considered it as a non-specific reactive pattern rather than a distinct entity.

The present case consisted of dense inflammatory infiltrate with abundant eosinophils extending into the underlying muscle with relatively few histiocytes and macrophages without any evidence of atypical cells. Moreover, the lesion regressed spontaneously after the incisional biopsy. Previous reports have suggested that the incisional biopsy for definitive diagnosis begins the healing process and results in complete resolution of the lesion (29).

Although most of the cases are reactive, certain cases demonstrate significant histologic atypia. The presence of such atypical cells corresponding to histiocytes, myofibroblasts or activated lymphoid cells intermixed with the inflammatory infiltrate would render them difficult to interpret. Such cases would require special immunohistochemical and molecular studies to exclude the possibility of other lymphoproliferative disorders such as a low-grade lymphoma.

Conclusion

Traumatic granuloma is a benign reaction of the oral mucosa with trauma as the contributing factor. Recognition is important because it often mimics oral cancer. In most of the cases, the lesions heal spontaneously so there is no need for more radical surgery. We believe that our case could be interpreted as a reactive process secondary to trauma. Clinical, histopathological and follow-up data are crucial to achieve a correct diagnosis in the difficult and uncommon cases and to avoid possible overtreatment.

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