

*Full Length Research Paper*

## Uncommon causes of gingivitis

Nwhator Solomon O.<sup>1\*</sup> and Ayanbadejo Patricia O.<sup>2</sup>

<sup>1</sup>Periodontology Unit, Department of Preventive and Community Dentistry, Obafemi Awolowo University, Ile-Ife, Nigeria.

<sup>2</sup>Periodontology Unit, Department of Preventive Dentistry, College of Medicine, University of Lagos, Nigeria.

Accepted 15 April, 2019

Dental plaque causes chronic gingivitis, but aggravating factors could be related to mouthbreathing and ankyloglossia. An adult female with a complaint of "bleeding gums" and an adult male with a complaint of "painful gums" were seen at a periodontal clinic. Authors found markedly enlarged tonsils compromising the airway with associated gingivitis in the female patient and ankyloglossia with associated mild gingivitis and Miller's class II gingival recession in the male patient. For these particular cases, chronic mouth-breathing and ankyloglossia appeared to be important in the aetiopathogenesis of chronic gingivitis and periodontitis.

**Key words:** Adverse effects, mouthbreathing, rare causes of gingivitis.

### INTRODUCTION

Dental plaque remains the primary aetiological factor for chronic gingivitis; however, anything that encourages plaque accumulation/retention will invariably aggravate existing gingivitis. Mitigating factors include inadequate oral hygiene measures, poorly fabricated prostheses, cervical overhangs and so on. There are other rare contributory factors which are not that common and so are often missed. Examples of two "rare local factors" in the aetio-pathogenesis of chronic gingivitis are mouthbreathing and ankyloglossia. The relationship between mouth-breathing and gingivitis has only been sparsely reported in the literature (Gulati et al., 1998). The few available reports are conflicting, with effects ranging from a definite association (Jacobson, 1973; Law et al., 1995) to partial association in the presence of other factors (Jacobson et al., 1972; Alexander, 1970) whilst their workers report a total lack of association (Sutcliffe, 1968). Ankyloglossia is often treated in childhood to avoid speech defects (Heller et al., 2005; Kupietzky et al., 2005) and so is rarely seen in adults. However, a few cases remain untreated into adulthood and the accompanying periodontal sequelae unfortunately go unnoticed.

### Aims

Mouthbreathing is an increasingly important health factor which may be easily diagnosed by dentists carrying out oropharyngeal examination as part of the routine oral examination. This report therefore has two aims:

1. To argue the case for the need of a more detailed oropharyngeal examination by dentists with a view to diagnosing subtle cases of mouthbreathing.
2. To discuss these rare causes of chronic gingivitis through the presentation of two cases.

### CASE REPORTS

#### **Case 1: Gingivitis in a mouth-breather**

An adult female in her mid-twenties presented at the periodontal clinic of a Nigerian tertiary health institution with a complaint of "bleeding gums." A provisional diagnosis of "gingivitis localized to the maxillary anterior sextant" was made (Figure 1). The patient's good oral hygiene – (OHIS <1.2) and the absence of significant crowding triggered our curiosity, leading us to take a more detailed history from the patient. The patient then volunteered the history of "24 h mouth-breathing" -in the

\*Corresponding author. E-mail: nwhator32@yahoo.com.



**Figure 1.** Localized gingivitis limited to maxillary incisors.

patient's own words-naturally leading to a more detailed oropharyngeal examination which revealed very large tonsils compromising a good part of the airway (Figure 2). These findings and the history put together led to a definitive diagnosis of "mouthbreathing -associated gingivitis." After counselling, full mouth oral prophylaxis was performed and oral hygiene instructions given. The patient was then referred to the otolaryngologist. A recall appointment was scheduled to hold after otolaryngological consultation but the patient failed to attend.

#### **Case 2: Gingivitis and recession in an adult with ankyloglossia**

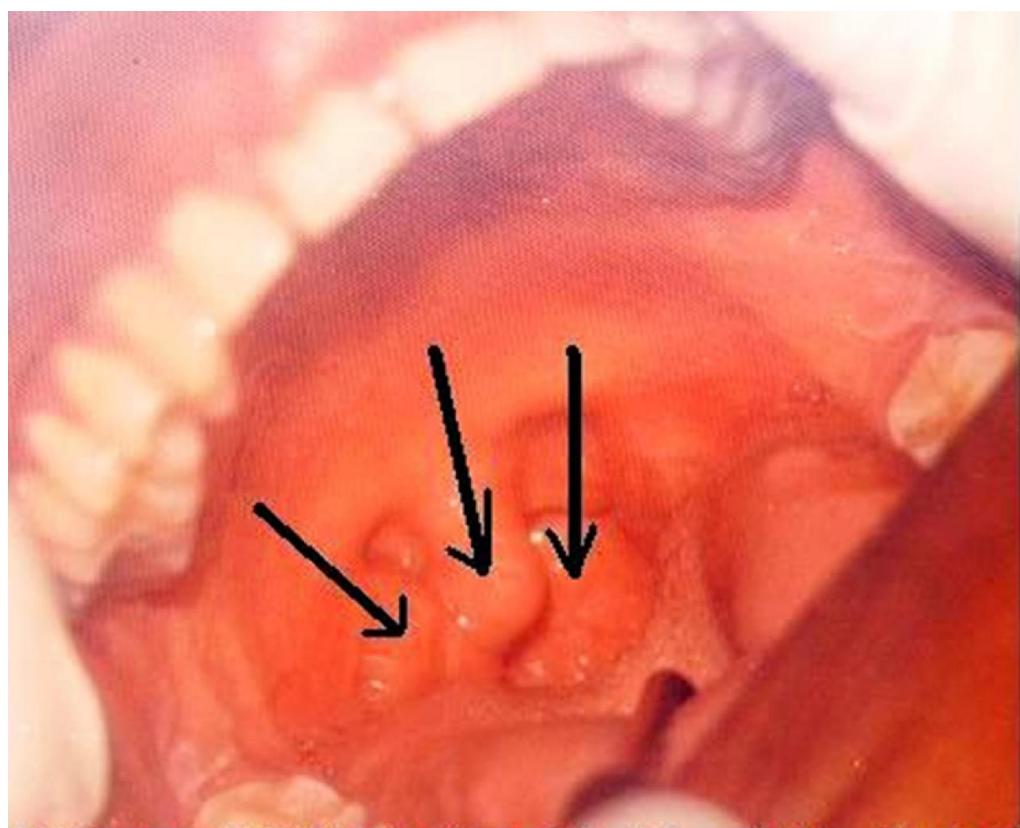
An adult male patient in his late thirties presented at the Periodontology clinic of a Nigerian tertiary health centre with a complaint of "painful gums" in relation to a maxillary molar. A chance finding of ankyloglossia with associated mild gingivitis and Miller's class II gingival recession of the lower central incisors was made. The recession was associated with loss of interdental papilla and bone (Figure 3).

#### **DISCUSSION**

The use of the term "mouth-breather's gingivitis" (Eslami et al., 1987) seemingly portrays a consensus on this clinical entity. However, at least three contradictory positions currently exist on the association between gingivitis and chronic mouth-breathing. While one position proposes a definite association between mouth-

breathing and chronic gingivitis (Gulati et al., 1998; Wagaiyu et al., 1991), others proposes that mouth-breathing is either of no consequence except in the presence of crowding and calculus, or that there is a complete lack of association between these entities except for "a slight increase in severity". Case report 1 illustrates oedematous gingivae unlike the hyperplastic variety reported in an earlier study (Hirschfield, 1932). Again, the inflammation in the current study was more severe facially, unlike a study which found more inflammation on the palatal surfaces of maxillary teeth of mouth-breathers (Wagaiyu et al., 1991). The presence of tonsilar and uvular hypertrophy corroborate the association between these and breathing abnormalities as reported in literature (Anand et al., 2005). There is however a paucity of research information on the gingivitis experience of persons with enlarged tonsils. One study reports "persistent difficulty in inspiration and mouth-breathing" in a patient who presented with compensatory post-tonsillectomy hypertrophy (Kutluhan et al., 2005). Other studies have identified various factors that can cause a mouth-breathing habit, such as asthma, allergies and enlarged glandular tissue (Stokes et al., 1996). Our study identifies frenal pull as a cause of localized gingivitis. The impact of frenal pull causes gingivitis to occur through two possible mechanisms namely, interference with plaque removal, and additionally, through the persistent, intermittent "opening" of the gingival sulcus during normal movements of the oral musculature (Manson et al., 1999). Whilst ankyloglossia is rare in adults, Ekenze et al. (2005) reported a prevalence of 3.6% among infants in Owerri, Nigeria, which is higher than the 0.3% reported in a Turkish study (Mumcu et al., 2005).

Ankyloglossia-associated gingival recession has been



**Figure 2.** Markedly enlarged uvula and tonsils.



**Figure 3.** Ankyloglossia and gingival recession.

sparingly reported (Ewart, 1990), and further observations in the reports relate to the loss of interdental bone height. In our study, loss of interdental bone height was a chance finding and because of its subtle presentation the authors argue that there is a greater likelihood of it remaining unnoticed by patients and practitioners alike. It does appear that some relationship exists between mouth-breathing, ankyloglossia and gingivitis. Whilst it is possible that the presence of plaque and calculus exacerbate its effects, this does not in any way diminish an association as this relationship exists with other modifiers of gingivitis and periodontitis such as smoking. If the association of smoking with periodontitis is accepted despite the fact that smoking exerts its influence more clearly when there is pre-existing gingivitis (Pindborg, 1995b; Persson, et al., 1999) then it is entirely plausible to suggest that the association between the parameters reported here should not be treated differently. Further support comes from a review of mouth breathing habits; "mouth-breathing as an oral habit is seldom discussed in detail and as a consequence has tended to be overlooked by dental professionals." Stokes (1996: 214) whilst more recent research links mouth breathing with many serious medical and dental conditions -gingivitis being just one of them (Jefferson, 2010). Other more serious effects such as sleep apnoea, reduced oxygen tension and resultant hypertension have also been reported.

## CONCLUSION

The cases discussed provide evidence to suggest that a relationship exists between mouth-breathing, ankyloglossia and gingivitis. More transdisciplinary studies around the condition need to be implemented to build a wider picture thereby improving clinical practice.

## REFERENCES

- Alexander AG (1970). Habitual mouth-breathing and its effect on gingival health. *Parodontologie*, 24: 49-52.
- Anand A, Vilela RJ, Guarisco JL (2005). Intracapsular versus standard tonsillectomy: review of literature. *J. La State Med. Soc.*, 157: 259-261.
- Ekenze SO, Ikechukwu RN, Oparaoha DC (2006). Surgically correctable congenital anomalies: Prospective analysis of management problems and outcome in a developing country, 52: 126-131.
- Eslami A, Sadeghi EM (1987). Mouthbreather's gingivitis: a clinicopathologic review. *Compendium*, 8: 20-24..
- Ewart NP (1990). A lingual mucogingival problem associated with ankyloglossia: a case report. *N Z Dent J.*, 86: 16-17
- Gulati MS, Grewal N, Kaur A (1998). A comparative study of effects of mouth breathing and normal breathing on gingival health in children. *J. Indian Soc. Pedod. Prev. Dent.*, 16:72-83.
- Heller J, Gabbay J, O'Hara C, Heller M, Bradley JP (2005). Improved ankyloglossia correction with four-flap Z-frenuloplasty. *Ann. Plast. Surg.*, 54: 623-628.
- Hirschfeld I (1932). Hypertrophic gingivitis: its clinical aspect. *JADA*, 19: 779-785.
- Jacobson L (1973). Mouth-breathing and gingivitis. *J. Periodontol. Res.*, 8: 269-277
- Jacobson L, Linder-Aronson S (1972). Crowding and gingivitis: a comparison between mouthbreathers and non-mouthbreathers. *Scand. J. Dent.*, 80: 500-504.
- Jefferson Y (2010). Mouth breathing: adverse effects on facial growth, health, academics, and behaviour. *Gen Dent.*, 58: 18-25; quiz 26-7, 79-80.
- Kupietzky A, Botzer E (2005). Ankyloglossia in the infant and young child: clinical suggestions for diagnosis and management. *Pediatr. Dent.*, 27: 40-46.
- Kutluhan A, Caksen H, Yurttas V, Kiris M, Yuca K (2005). The effectiveness of unilateral tonsillectomy in chronic adenotonsillar hypertrophy. *Kulak Burun Bogaz Ihtis Derg.*, 15: 14-18.
- Law CS, Sheehan M, Needleman HL (1995). Centronuclear myopathy and nursing pattern caries: management of a 1 year old. *J. Clin. Pediatr. Dent.*, 20: 69-72.
- Manson JD, Eley BM (1999). Outline of Periodontics. 3rd Ed. Butterworth-Heinemann, p. 117.
- Mumcu G, Cimilli H, Sur H, Hayran O, Atalay T (2005). Prevalence and distribution of oral lesions: a cross-sectional study in Turkey. *Oral Dis.*, 11: 81-87.
- Persson L, Bergstrom J, Gustafsson A, Asman B (1999). Tobacco smoking and gingival neutrophils activity in young adults. *J. Clin. Periodontol.*, 26: 9-13.
- Pindborg J (1995b). Influence of service in armed forces on incidence of gingivitis. *J. Am. Dent. Assoc.*, 42: 517522
- Stokes DM (1996). A student research review of the mouth-breathing habit: discussing measurement methods, manifestations and treatment of the mouth-breathing habit. *Probe*, 30: 212-214.
- Sutcliffe P (1968). Chronic anterior gingivitis: An epidemiologic survey in school children. *Br Dent J.*, 125: 47-52.
- Wagaiyu EG, Ashley FP (1991). Mouth-breathing, lip seal and upper lip coverage and their relationship with gingival inflammation in 11-14 year-olds. *J. Clin. Periodontol.*, 18: 698-702.