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Traumatic extravasation of blood in gingiva and floor of mouth associated with vitamin K deficiency in a patient of oral submucous fibrosis- A case report

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ABSTRACT

Vitamin K, a fat soluble vitamin, is an essential factor for the activation and synthesis of coagulation factors II, VII, IX, X and protein C and S. Vitamin K deficiency can easily develop in patients having chronic debilitating mouth disease such as oral submucous fibrosis (OSMF) due to poor nutritious food intake. We present a case of a 45 years old male patient having grade II OSMF reporting with intermittent bleeding and swollen gingiva with extravasation of blood in gingiva and floor of mouth secondary to local trauma. Patient's prothrombin time, activated partial prothrombin time and platelets were increased leading to inadequate activity of coagulant factors such as factors resulting in intermittent spontaneous bleeding and extravasation of blood in gingiva and floor of mouth. Patient was treated with injectable Vit K. There was complete resolution of extravasated bleed and edematous gingiva with stoppage of intermittent spontaneous bleeding. Periodontal surgery took care of localised periodontits.

Keywords: traumatic extravasation of blood, gingiva, floor of mouth, vit k deficiency, oral submucous fibrosis

1. INTRODUCTION

The oral mucosa is constantly subjected to external and internal stimuli manifesting a spectrum of diseases ranging from developmental, reactive and inflammatory conditions to neoplastic conditions (Shukla et al., 2014; Effiom et al., 2011). In humans, reactive hyperplastic lesions are the most frequently occurring oral mucosal lesions (Nartey et al., 1994). These lesions lead to a reaction due to some kind of irritation or low-grade injury like chewing,

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trapped food, calculus, fractured teeth or iatrogenic factors, including overextended edges of dentures and overhanging dental restorations (Zareim et al., 2007). Diagnosis of each lesion is aided by their clinical and radiographic features, but histopathology is the key for a final diagnosis (Shukla et al., 2014; Peralles et al., 2006).

A multitude of causes may lead to gingival enlargement. The most common is chronic inflammatory gingival enlargement, in which the gingiva appears clinically as soft and red coloured. This is caused due to tissue oedema and cellular infiltration, due to prolonged exposure to bacterial plaque, and is best treated with conventional periodontal treatment, such as scaling and root planning. Fibrotic components of chronic inflammatory gingival enlargements that do not respond to and undergo shrinkage after periodontal procedures like scaling and root planning and are treated with surgical removal of the excess tissue (Newman et al., 1996). The accumulation and retention of plaque is the chief cause for inflammatory gingival enlargement. The major risk factors include poor oral hygiene as well as physical irritation to the gingiva due to improper restorative and orthodontic appliances (Hirschfield, 1932; Newman et al., 1996).

Gingival bleeding is perhaps the most common manifestation of an inflammatory process for which patients are reporting daily at the dental clinic. Spontaneous gingival bleeding that is sudden in onset and difficult to control, warrants further investigations (Gleeson, 2002). Several causes contribute to gingival bleeding. Vitamin deficiencies are one of them. Vitamins act as catalysts for a number of metabolic reactions using essential nutrients such as proteins, fats and carbohydrates for energy, growth and cell maintenance. Vitamin deficiency causes several non-specific oral conditions such as glossitis, stomatitis and mucosal ulceration (Cagetti et al., 2020). Vitamin K is a group of vitamins which are essential for the synthesis of proteins that are precursors or prerequisites for formation of blood coagulation factors such as prothrombin and factors VII, IX, and X (Shearer and Newman, 2008; Coutu et al., 2008). This case report describes a case of gingival bleeding caused initially due to local trauma and later uncovering the hidden aspects for diagnosing bleeding tendency leading to intermittent spontaneous gingival bleed and extravasation of blood in gingiva and floor of mouth due to vitamin K deficiency.

2. CASE REPORT

A 45-year-old male patient reported to the department of Oral Medicine and Radiology; with the chief complain of bleeding and swollen gums since 3 days. History of present illness revealed that he was apparently alright before 3 days. Then he noticed a gingival swelling lingually in lower left anterior region of jaw associated with bleeding. Patient gave history of betel nut lodgment between gingiva and premolars for which he repeatedly used toothpick for its removal and then noticed a gradual increase ingingival swelling to the present size associated with bleeding for which he reported to Department of Oral Medicine and Radiology. His past medical and dental history was not contributory. Swelling was not associated with pain. It was localized and associated with 34, 35 & 36 lingually which increased in size within a span of 3 days. There was no history of bleeding from any other parts of the body. Patient's habit history revealed that the patient had habit of chewing areca nut and kharra since 10 years, 3-4 times a day. Patient was conscious, cooperative and well oriented to time, place and person. On general examination, there was no pallor, icterus, clubbing and odema. On systemic examination, the vital signs and systemic parameters were within normal limits. There were no signs of petechiae, purpura or ecchymosis over the body.

On palpation, temporomandibular joint movements were smooth and synchronous bilaterally. Lips were competent. Muscles of mastication were normal. A single submandibular lymph node was palpable on left side. The mouth opening was 30 mm. On intraoral examination, there was generalized gingival inflammation and recession. The stains and calculus were present. The buccal mucosa was blanched with presence of fibrous bands and erosive areas. Blanching was also seen on the soft palate, and the labial mucosa (Fig. 1 &2). Examination of area of chief complaint revealed a localized red gingival edematous enlargement with lacerated inner surface of lingual gingiva measuring approximately 2.5 cm * 1.5 cms in dimension extending anteroposteriorly from mesial of 33 to distal of 35 and superioinferiorly from free gingiva of 33, 34, 35 to lingual vestibule of mandible with extravasation of blood in floor of mouth on left side (Fig 3).

On palpation, the swelling was non-fluctuant and soft in consistency. There was no pus discharge. Hard tissue examination revealed proximal caries with 35 and 36 and tenderness was positive with 33, 34, 35 on vertical and horizontal percussion. There was grade II mobility with 43, 32, 33. While 31, 41 & 42 teeth were missing. Periodontal pockets were present with 33, 34, 35, 36. From the history of traumafrom toothpick and clinical presentation, a provisional diagnosis of bloody edematous gingival enlargement in 34, 35, 36 region with traumatic extravasation of blood in the floor of mouth on left side with oral submucous fibrosis stage II was made. Patient was advised panoramic radiograph which revealed severe bone loss in the mandibular right posterior region (43, 44, 45, 46, 47, 48) and moderate bone loss in 32, 33, 34, 35, 36 region (Fig 4).

Figure 1 showing blanched soft palate.

Figure 2 showing blanched right buccal mucosa with multiple erosive areas

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Figure 3 showing localized red edematouslingual gingiva with lacerated inner surface in 34, 35 and 36 region with extravasation of blood in the floor of mouth

Figure 4 Panoramic radiograph showing severe bone loss in 43, 44, 45, 46, 47, 48 regions and moderate bone loss in 32, 33, 34, 35, 36 regions.

Patient was advised blood investigations mainly the complete blood count (CBC), HbA1c, and the coagulation profile which included the bleeding & clotting time, prothrombin time, activated partial thromboplastin time. CBC report revealed that all the parameters were within normal limits except for marginal rise in platelet count and mean corpuscular haemoglobin concentration (MCHC) count with marginal decrease in mean corpuscular volume (MCV). HbA1c was within normal limits. Coagulation profile revealed increased prothrombin (18. 0 sec) and activated partial thromboplastin time (35.0 sec). The bleeding time and clotting time were within normal limits. Clotting factors were also within normal limits. On evaluation and interpretation of coagulation profile, patient was suspected of Vit K deficiency. Patient was referred to a general physician for evaluation. On clinical and blood reports evaluation, patient was diagnosed as a case of Vit K deficiency. Patient was treated for Vit K deficiency by administering Vit K1 injection IM daily for three days. Patient was also prescribed Tab Vitaforte for daily 20 days.

After resolution of extravasated bleeding in the floor of mouth and regression in the size of gingival swelling with stoppage of intermittent gingival bleeding; the patient was operated for the gingival swelling by performing gingivectomy and gingivoplasty with the placement of gel foam at the site of surgery. The gingival tissue was sent for histopathological examination which revealed non-keratinized stratified squamous epithelium. Connective tissue showed inflammatory cell infiltrate, mild to moderate amount of collagen fibre bundles and areas of extravasated blood in the connective tissue (Fig. 5). Patient was recalled after 15 days for post-operative follow up. There was complete healing of the lesion (Fig 6).

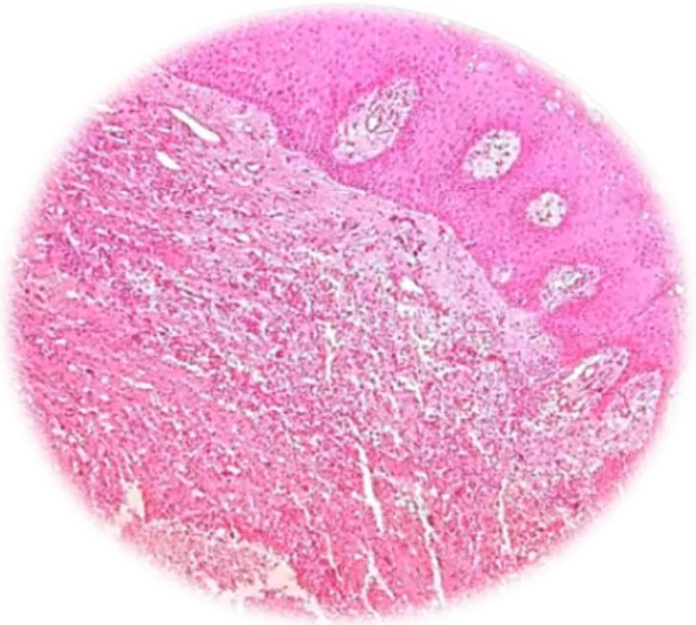

Figure 5 10 x power view showing inflammatory cell infiltrate, mild to moderate amount of collagen fibre bundles and areas of extravasated blood in the connective tissue.

Figure 6 Postoperative follow up photograph showing complete healing of the lesion

3. DISCUSSION

Food lodgement or impaction is usually the occlusal force wedging of food substances into the interproximal periodontal tissue. It is classified into vertical and horizontal (Li et al., 2016; Khairnar, 2013). Horizontal food impaction is characterized by lateral pressure from lips; cheeks, and tongue, forcing food dregs and fibers into the enlarged interproximal gingival embrasure and the

food dregs can be easily removed using a dental floss or a tooth pick in gingivoocclusal direction, giving temporary relief. It is further treated using removable prosthetic appliances such as hard splint and soft artificial gingiva (Peng et al., 2005). Vertical food impaction often results in acute papillary gingivitis and gingival abscess which requires a visit to the dentist (Jernberg et al., 1983). The recent classification of periodontal diseases comprises of lesions of iatrogenic, accidental, and unnatural traumatic origin. Though the traumatic gingival lesions have a relatively higher prevalence, there is inadequate information available in the literature about their diagnosis and management. Traumatic lesions, may it be physical, chemical, or thermal in nature, are among the most common traumatic injuries in the mouth (Dilsiz and Aydin, 2009). Traumatic injuries due to food lodgement can cause gingival bleeding and reactive hyperplasia (Shukla et al., 2014).

Inflammatory fibrous hyperplasia is a benign soft tissue response to a local irritant. It can be due to calculus, a sharp tooth, a broken filling, excessive plaque and lodgement of other irritating substances like pieces of betel nut. It clinically presents as a well-demarcated gingival enlargement. The color ranges from normal to red depending upon whether or not the surface is ulcerated, keratotic or both. It can be soft to firm on palpation (Zain and Fei, 1990). Histologically, inflammatory fibrous hyperplasia consists of hyperplastic connective tissue with dilated blood vessels and cells of inflammatory reaction predominantly lymphocytes and plasma cells. The surface epithelium ranges from normal to acanthotic, ulcerated, keratotic or a combination of two or more of these features (Shukla et al., 2014; Greenberg and Glick, 2003). In the present case, histopathological sections showed presence of chronic inflammatory cells such as lymphocytes and plasma cells.

The coagulation profile of the patient in this case report prompted us for patient's thorough inspection and evaluation of his nutritional status since there was a tendency to bleed intermittently with extravasation of blood. After referring the patient to a physician, it became apparent that the cause of such spontaneous bleeding may have been a deficiency of Vitamin K as the patient responded well to vitamin K supplementation. Vitamin K is essentially required for the processes like γ-carboxylation of glutamic acid residues of coagulation factors II, VII, IX and X. Deficiency of vitamin K leads to inadequate activity of these factors, resulting in bleeding (Sankar et al., 2016). Vitamin K deficiency may lead to Vitamin K Deficiency Bleeding (VKDB). The VKDB is a disorder of hemostasis in which coagulation parameters are quickly corrected by vitamin K supplementation (Marchili et al., 2018). Vitamin K deficiency results in a depletion of liver stores of phylloquinone, depleted level of vitamin K1 in the plasma, elevated level of K1 epoxide, presence of noncarboxylated form of protein (PIVKA), diminished levels of effective vitamin K-dependent clotting factors, increased prothrombin time and APTT, and thrombo test. When the progression of deficiency leads to abnormal clotting, a generalized bleeding tendency occurs. Presence of noncarboxylated prothrombin (PIVKA-II) is the most sensitive marker of deficiency of vitamin K (Shapiro et al., 1986).

In the present case, patient was having oral submucous fibrosis, a chronic debilitating disease, which led to nutritional deficiency including Vitamin K deficiency affecting clotting factors resulting in extravasation of blood secondary to traumatic injury. The present case was treated with vitamin K supplements with complete recovery and follow up showed resolution of extravasated bleeding and no episode of intermittent bleeding. The post-surgical healing was uneventful.

4. CONCLUSION

Oral and dental care providers must be aware of systemic causes of bleeding in oral cavity and impact of bedding disorders, proper medical evaluation of dental patients is therefore necessary in diagnosis of causes of bleeding and before performing an invasive procedure.

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Author Contributions

Dr. Ramhari Sathawane, Dr.Runal Bansod, Dr. Rakhi Chandak intellectualised the case and had planned the treatment. Dr. Ashish & Dr. Romita, Dr. Kshitija & Dr. Vidyarjanhave contributed in compiling the literature associated with case report. Dr. Dhiran Talatule has provided an important revision of the manuscript.

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Conflict of Interest

The authors declare that there are no conflicts of interests.

Informed consent

Informed consent of patient was taken.

Data and materials availability

All data associated with this study are present in the paper.

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