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Leukemic gingival enlargement: A role of periodontist in early diagnosis and prompt referral: A case report

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Abstract
Leukemia is a malignant disease of bone marrow. Due to its high death rate it needs early diagnosis, prompt referral and medical treatment. Gingival enlargement is usually the first sign in specific types of leukemia. Here is a case report of 35 years old male presenting with gingival hyperplasia, gingival bleeding & systemic signs and symptoms of leukemia. This case report shows that gingival hyperplasia may represent an early manifestation of the underlying systemic disease. So the role of Periodontist in early diagnosis and prompt referral.

Keywords: gingival enlargement, leukemia

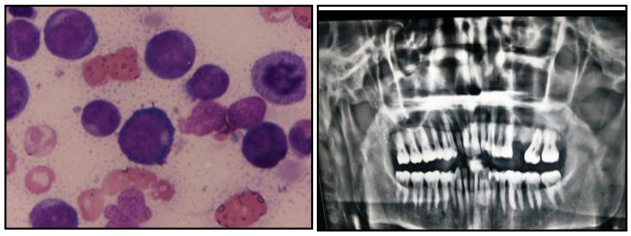
Introduction
Leukemia is a heterogeneous group of hematological disorders that arises from haemopoietic stem cells characterized by disordered differentiation and proliferation of neoplastic cells. leukemia is categorized according to its clinical behavior acute or chronic & histogenetic origin as lymphocytic or myelocytic [1].
Acute myelocytic leukemia is classified according to French American British classification system first proposed in 1976 that defined 6 types based primarily based on morphology & cytochemistry. In 1997 WHO proposed 4 groups in AML category [2].
Gingival enlargement in leukemia occurs due to infiltration of premature leukocytes and is one of the earliest signs of acute leukemias which helps in early diagnosis & prompt referral.

Case Report
A 35 year old Male patient came to the Department of Periodontology with the chief complaint of swelling & bleeding of gums from last 3 months Medical history revealed that the patient experienced lethargy, easy fatigue, Palpitations, slight weight loss and loss of appetite since last few months. However, he denied the intake of any medications for chronic illness. Physical examination revealed that the patient was poorly built and nourished with petechial spots on the skin in the forearm and legs. Bilateral submandibular and deep cervical lymphadenopathy was appreciated. Lymph nodes were indurated and tender on palpation. Intraoral examination revealed generalized gingival enlargement on the buccal, labial, palatal and lingual aspect of marginal and attached gingiva of the maxillary and mandibular arches [Figure 1a-c]. Gingiva was swollen, glazed, shiny, bluish red in color. Gingival enlargement extended on to one-third to one-half of the crown portion of teeth. The patient had a foul odor and fair oral hygiene. On palpation, gingiva was soft, edematous, devoid of stippling and tender on palpation. Gingival bleeding was present on slightest provocation. Orthopantomogram did not reveal any bony involvement (Fig: 2b) Inflammatory gingival enlargement, drug induced gingival enlargement, conditioned gingival enlargement, and systemic gingival enlargement were considered in the differential diagnosis. Inflammatory enlargement was ruled out as the inflammatory component (plaque and calculus) was not significant to the severity of the presented gingival enlargement. Drug-induced enlargement was ruled out as thorough history taking did not reveal the intake of any drug significant for gingival enlargement. However, features of lethargy, weight loss and loss of appetite along with the rapidly progressive gingival overgrowth substantiated an underlying systemic disease.

A B

C D

Fig 1: (a) Generalized gingival enlargement involving maxillary and Mandibular arch. (b) Boggy, reddish-blue gingiva on the buccal, labial, palatal and lingual aspect of marginal and attached maxillary gingiva. (c) Enlarged gingiva covering the crown surface (d) erythematous patches on the calf also called leukemic cutis



A B

Fig 2: A Peripheral blood smear showing numerous Mon oblasts and promonocytes and scarcity of platelets. B) OPG showing no bony involvement

Table 1

Table 1: Complete blood count of the case

Blood parameters	Present value	Normal value
Hb %	7.4 g	11-13 g
RBC's	1.23 million/cu mm	3.5-5.5 million/cu mm
Platelets	60,000/cu mm	1,50,000-4,50,000/cu mm
WBC's	81,2000/cu mm	4,000-11,000/cu mm
Neutrophils %	5	40-70
Lymphocytes %	2	20-40
Eosonophils %	6	1-8
Basophils %	2	1-4
Monoblasts %	60	0
ESR	80 mm/h	2-12 mm/h

Hb: Hemogram; RBC's: Red blood cells; WBC's: White blood cells; ESR: Erythrocyte sedimentation rate

Complete blood count was performed, and it revealed features of leukocytosis, anemia and thrombocytopenia (Table: 1) Peripheral blood smear reveals numerous monoblasts (60%) and promonocytes. Monoblasts are having moderate to severe basophilic cytoplasm with large, round nuclei and lacy chromatin. Scarcity of platelets can be appreciated with a nucleated red blood cell (RBC) in the background. (Fig: 2A) Based on the blood parameters and peripheral blood smear, a final diagnosis of gingival enlargement due to acute myeloid leukemia (AML) was made. The patient was advised to maintain proper oral hygiene by use of soft bristle toothbrush and 0.2% oral chlorhexidine rinses. The patient was referred to oncology center for bone marrow aspiration and chemotherapy. However, the patient died due to multiple organ failure.

Discussion

Gingival overgrowth or "gingival enlargement" is an increase in size of the gingiva and accounts to one of the many types of periodontal diseases. Gingival enlargement in leukemia occurs due to infiltration of immature leukemic cells & is one of the earliest signs of acute myeloid leukemia [3]. Although various predisposing factors have been attributed, yet the exact etiology of leukemia remains obscure. Predisposing factors include: Exposure to ionizing radiation or electromagnetic fields, cytotoxic therapy, and viral infections.[4]According to Stafford *et al* [5] oral lesions are more frequently seen in patients with acute leukemia. Skin lesions consists of erythematous patches on hands feet, shoulders, back, chest were seen in this patient called as the Leukemic leukemia cutis (ALC) which is the infiltration of skin by blasts prior to appearance in peripheral blood and bone marrow [5].

Oral manifestations

They may either be the result of direct infiltration of leukemic cells (primary) or secondary to underlying thrombocytopenia, neutropenia, or impaired granulocyte function. Gingival infiltration represents a 5% frequency as the initial presenting complication of AML [6]. Dreizen*et al* [7] suggested that patients with acute monocytic leukemia had the greatest incidence of gingival infiltrates (M5) (66.7%) followed by acute myelomonocytic leukemia (M4) (18.5%) and acute myeloblastic leukemia (M1, M2) (3.7%).

Common oral manifestations of acute leukemia's include swollen gingiva, oral ulcers, spontaneous gingival bleeding, petechiae, pale mucosa, viral and fungal infections herpes and candidiasis [8] Gingival overgrowth may vary in severity, from minimal to complete tooth coverage and hinders with the function and aesthetics [9]. Diagnosis is suggested by complete blood investigation showing pancytopenia, smear examination, While bone marrow biopsy investigation of specific type of leukemia simplifies the best treatment & prognosis. In this case further sub classification could not be done due to lack of bone marrow biopsy examination.

Treatment options in acute leukemia's include aggressive multidrug chemotherapy and allogenic bone marrow transplantation. Periodontal and dental treatment for leukemic patients should always be planned after medical evaluation and physicians consent. Periodontal intervention (scaling and root planning) should be done under prophylactic antibiotics. Our patient was advised to maintain meticulous oral hygiene by use of soft bristle tooth brush and 0.2% chlorhexidine mouth rinses.

Conclusion

Oral cavity functions as an early indicator for a variety of systemic diseases. Early and accurate diagnosis of these underlying systemic disorders entails thorough examination of the oral mucosa, gingiva, teeth, tongue and other oral tissues. Although gingival changes may be related to local factors in the oral cavity, it can also be an expression of systemic conditions such as blood dyscrasias, endocrinal imbalance, and nutritional deficiencies. Oral changes may be the first and

only presenting signs in leukemic patients which compels the patient to seek dental care. So the dentist must be aware about the oral manifestations of leukemia for early diagnosis & prompt referral.

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