

Gum Hypertrophy- Warning Sign of acute myeloblastic leukemia (AML M2): A Case Report

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Abstract— Many systemic diseases are early indicated by oral manifestations. Among such systemic diseases Leukemia is one which shows characteristic oral manifestations. Acute myeloid leukemia (AML) is characterized by maturation arrest of myeloid cells which leads to increase in number of myeloblasts in the bone marrow and hemopoietic insufficiency. Patients with AML in general may present with a wide variety of (atypical) symptoms, which may range from minor symptoms to life-threatening complications. Gingival hyperplasia is most commonly seen with the AML subtypes acute monocytic leukemia (M5) and acute myelomonocytic leukemia (M4). Here, an unusual case of diffuse gum hypertrophy in a 25 year old Asian female which led to laboratory studies yielding a rapid and relatively early diagnosis of acute myeloblastic leukemia (AML M2) was reported. This case emphasizes that clinicians and dentists should be well acquainted with the oral manifestations of systemic diseases and stresses the role of gingival hypertrophy as a diagnostic indicator in leukemia.

Keywords: *Gingival enlargement, Leukemia, Acute Diffuse Myeloblastic.*

I. INTRODUCTION

Gingival swellings may manifest as a localized metastatic deposit or hematological disorder such as lymphoma or a leukemic infiltrate. The differential diagnosis of a patient presenting with gingival hypertrophy would include drug-induced hypertrophy, chronic gingivitis, idiopathic or neoplastic processes¹.

Leukemia is a heterogenous group of hematological disorders that arises from a hematopoietic stem cell characterized by a disordered differentiation and proliferation of neoplastic cells¹. This neoplastic proliferation in marrow may result in pancytopenia. Also, the neoplastic cell infiltration may be observed in organs such as lymph nodes, spleen, gingiva, central nervous system and skin².

Leukemia is divided into acute or chronic variety, based on its clinical course, and into lymphocytic and myelocytic, based on its histogenetic origin. Acute myelocytic leukemia (AML). leukemia, is commonly classified under 8 subgroups according to the French-American-British (FAB) classification system including M0 (undifferentiated leukemia), M1 (acute myeloblastic leukemia), M2 (acute myeloblastic leukemia with maturation), M3 (acute promyelocytic leukemia), M4 (acute myelomonocytic leukemia), M5 (acute monocytic leukemia), M6 (acute erythroblastic leukemia) and M7 (acute megakaryoblastic leukemia).^{3,4}

Leukemia is the most common childhood malignancy in India ranging between 25 and 40%. Sixty to 85% are acute lymphoblastic leukemia (ALL) of all reported leukemias.⁵ Oral lesions associated with leukemia have been well documented.⁶ Signs and local symptoms of leukemia in the oral cavity include oral mucosa paleness with gum bleeding, ulcerative necrotic lesions and gingival hyperplasia.⁷ Here,

an interesting case of diffuse gingival hyperplasia who was diagnosed as acute myeloblastic leukemia (AML M2) on further investigation was reported as case report.

II. METHODOLOGY

A case of diffuse gingival hyperplasia in a 25 year old Indian female who attended at SMS Hospital Jaipur (Rajasthan) India was investigated in detailed and found a case of acute myeloblastic leukemia (AML M2). So case study was done thoroughly and case report was prepared to publish this rare case.

III. CASE REPORT

A 25-year old female presented to Department of Medicine, SMS Medical College and Hospital, Jaipur with the complaints of swollen gums and low grade continuous fever for past 4 weeks. She also gave history of menorrhagia from last 4 months and sternal tenderness from last 1 month.

History of present illness revealed that all the symptoms were gradual in onset, additive and progressive. Initial diagnosis of clinical malaria was made outside at local hospital and anti-malarials were given, subsequently gum hypertrophy was treated as poor oral hygiene but swelling continued to increase despite the treatment.

She did not give any history of hemodialysis/breathlessness/arthritis/oral ulcers/rashes/dry eye/dysphagia/photosensitivity/drug abuse.

Her clinical examination revealed fever and signs of anemia with normal vitals. Axillary and cervical subcentimetric lymphadenopathy was there.

Systemic examination was unremarkable except mild hepatosplenomegaly with respiratory, cardiovascular and central nervous system were within normal limit.

Oral cavity examination revealed generalized, diffuse enlargement of mandibular and maxillary gingiva covering about half of the crown structure involving buccal, lingual and palatal aspects. (Figure1)

Figure 1
Clinical photograph depicting Gingival Hyperplasia



Complete blood count revealed- Hb- 9.5 gm/dl, TLC- 35000/mm³, ESR- 110 mm at 1st hour, platelet count- 1 lakh/mm³. An abnormal leukocyte differential displayed 30% segmented neutrophils, 50% blasts, 0% monocytes, 20% lymphocytes and 00% eosinophils. Peripheral blood film showed

leukocytosis with numerous blasts having immature chromatin, prominent nucleoli, irregular nuclear margins, reduced platelets and anisopoikilocytotic, microcytic RBCs suggestive of an acute leukemia.

Urine routine and microscopic examination was normal. Widal-negative, HIV- negative, HBsAg-negative, ANA- negative, USG abdomen was suggestive of mild hepatosplenomegaly.

Bone marrow biopsy revealed hypercellularity with predominance of sheets of blast cells. Flow Cytometry was done that showed AML-M2 stage. Therefore the diagnosis of acute myeloid leukemia M2 was established. Gum biopsy showed non-specific inflammatory changes.

The patient was taken on chemotherapy with i.v. administration of cytosine arabinoside (ARA-C, 200 mg (100 mg/m²/day) x 7 days) and idarubicin hydrochloride (idarubicin, 12mg (12mg/m²/ day) x 3 days). Complete blood count values demonstrated remission with TLC- 11000/mm³, Hb- 10.5gm/dl, and platelet count- 2lakhs/mm³ after eight weeks of initial therapy. Regression of the gum hypertrophy without performing periodontal therapy was also significant. One month later, monoblasts were decreased from 50% to 4% following initial therapy. The patient was then started on maintenance therapy which was two times for two month. The medical administration was included; Cytosine arabinoside (ARA-C, 200 mg (100 mg/m²/ day) x 5 days) and idarubicin hydrochloride (idarubicin, 12 mg (12 mg/m²/ day) x 3 days). Finally, the patient was counselled for bone marrow transplantation. Although we had recalled the patient after chemotherapy, but the patient did not come back to our hospital. Therefore, we could not have the patient's outcome.

IV. DISCUSSION

Lesions of mouth and oral cavity are frequently associated with any kind of fever. The patient may complain of a sore throat, ulceration of the gum, mouth or pharynx or an upper respiratory tract infection. Patients with marked oral sepsis or gingival hypertrophy may first consult a dentist. In a few cases, there is a true gingival hypertrophy which keeps on increasing and leads to heaping of the gum margin so that teeth almost buries in the gum. In an otherwise normal individual Gum Hypertrophy should always arouse the suspicion of a systemic disease once other causes including local and drug reactions are ruled-out. An algorithm to demonstrate the different causes of Gum Hypertrophy is presented below⁸:

1. V- Vascular.
2. I- Inflammatory lesions include gingivitis, whether viral (aphthous stomatitis), fusospirochaetal ("trench mouth"), or monilial. Focal abscesses of the gums are common. Alveolar abscesses also cause focal swelling of the gums.
3. N- Neoplasms remind one of monocytic leukaemia and multiple myeloma, which are associated with diffuse hypertrophy and local tumours such as a sarcoma, papilloma, odontoma, and squamous cell carcinoma.
4. D- Deficiency diseases include scurvy and most vitamin deficiencies.
5. I- Intoxication suggests the common diffuse hyperplasia in patients with epilepsy taking diphenylhydantoin and related drugs, including barbiturates.
6. C- Congenital or acquired malformations remind one of the gingivitis secondary to malocclusion, poor fitting crowns or orthodontal appliances, and periodontal cysts, secondary to chronic periapical granuloma.

7. A- Autoimmune and allergic diseases include the hypertrophy of thrombocytopenic purpura and the contact gingivitis from dentures, mouthwashes, and toothpastes.
8. T- Trauma to the gums may cause local hematomas and fractures.
9. E- Endocrine disorders suggest several conditions that may cause gum hypertrophy. Gum hypertrophy in pregnancy, juvenile hypothyroidism, the giant cell granulomas of hyperparathyroidism, pituitary dysfunction, and diabetes mellitus are the most important.

Oral manifestations in patient with leukemia have been described in all subtypes of AML, chronic myeloid leukemia, acute lymphocytic leukemia, and chronic lymphocytic leukemia.⁹ Gingival hyperplasia represents a 5% frequency as the initial presenting complication of AML.^{1,2} Gingival infiltration of leukemic cells is most commonly seen in acute monocytic leukemia (M5) and acute myelomonocytic leukemia (M4).^{10,11} Dreizen et al¹² evaluated 1076 leukemic patients and found gingival involvement in 66.7% of M5 patients and 18.5% of M4 patients.^{10,12,13} In this case report, a rapid gingival hyperplasia together with fever was the main reason of the patient to seek medical opinion. In these kinds of patients, a dental therapy driven without haematological consultation could be fatal. The fact that gingival hyperplasia are sometimes the first manifestation of the disease implies that professionals must be sufficiently familiarized with the clinical manifestations of systemic diseases^{1,13,14}. Also a prominent recovery was observed in gingival hyperplasia after chemotherapy together with complete blood counts. This highlights that elimination of the inciting factor or maintaining the ideal systemic condition might causes a complete remission of gingival hyperplasia in the setting of AML.

V. CONCLUSION

This case emphasizes that clinicians and dentists should be well acquainted and informed with the oral manifestations of systemic diseases and stresses the role of gum hypertrophy as a diagnostic indicator of leukemia. An accurate history is critical for establishing the diagnosis and subsequent management in all patients. This case also shows that gingival hyperplasia due to leukemic infiltration commonly improves by chemotherapy and no periodontal treatment is required.

CONFLICT OF INTEREST

None declared till now.

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