Oral Cavity “A Window to Systemic Illness”: A Case Report of Gingival Enlargement Secondary to Acute Leukemia

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ABSTRACT

Oral signs and symptoms most of the times indicate a local disease and can be treated with dental treatment; however, sometimes it can be an indication of any underlying severe disease. Acute myeloid leukemia is one such grave hematological malignancy with a very short lifespan if undiagnosed and left untreated, which shows oral signs as the first clinical manifestations of the disease. This is a case report where oral findings lead to diagnosis of acute myeloid leukemia in a 55-year-old female.

Keywords: Acute myeloid leukemia, Gingival enlargement, Oral manifestations of acute leukemia.

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INTRODUCTION

The oral cavity is a mirror of the body. Many systemic diseases often have oral manifestations as the first and the only sign. The oral cavity cannot be isolated from and is not immune to what is occurring physiologically and pathologically because oral tissues are nourished by the same blood supply as is the entire body. Leukemia is one such malignant hematological disorder presenting with varied clinical and oral manifestations.¹ Presented below is a case of severe gingival enlargement, which was present in the patient along with fever and which turned out to be a grave systemic disease called “acute myeloid leukemia” (AML).

CASE DESCRIPTION

A 55-year-old female reported to the Department of Oral Medicine and Radiology in Mahatma Gandhi Dental College with a chief complaint of swelling and pain in her gums with spontaneous gingival bleeding along with fever, malaise, body ache, joint pain, and fatigue since last 15 days. Her medical, drug, and family history were unremarkable. General examination showed pallor of nail beds and conjunctiva, 100°C fever, blood pressure was 160/100 mm Hg, respiratory rate was 24 breaths per minute, and she weighed 55 kg with height of 5 feet 5 inches. Extraoral examination revealed slightly tender bilateral submandibular lymph nodes.

On intraoral examination, there was severe diffuse, generalized gingival enlargement of all papillary, marginal, and attached gingival up to middle third of teeth crowns in both maxillary and mandibular teeth (Fig. 1). The gingiva was firm in consistency, tender on palpation, with bleeding on probing and significant amount of calculus and plaque. All her teeth showed mobility. A provisional diagnosis of chronic generalized moderate periodontitis was given and intraoral periapical radiographs (IOPAs) and an orthopantomogram (OPG) were advised.

Investigations and Diagnosis

Intraoral periapical radiographs (Fig. 2) and OPG (Fig. 3) showed generalized angular bone loss up to middle third of roots in posterior teeth and up to apical third of roots in anterior teeth. There was periodontal ligament (PDL) widening in all the teeth. Tooth no. 35 had deep caries involving pulp and 45 was a root

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stump with rarefying osteitis indicative of chronic periapical abscess in both these teeth.

Fig. 1: Gingival enlargement (mandible)

Blood Investigations

Routine blood investigations of complete blood count and random blood sugar showed hemoglobin: 8.20 g%, packed cell volume: 25%, total leukocyte count: 45,800 cells/cumm, platelets: 69,000 cells/cumm, and blood sugar (random): 90 mg/dL.

Looking at these investigations, we advised a differential leukocyte count, which was immediately conducted in Mahatma Gandhi Hospital. It showed neutrophils: 17%, lymphocytes: 9%, eosinophils: 1%, monocytes: 2%, basophils: 1%, myelocytes: 3%, promyelocytes: 51%, and blasts: 28%.

A diagnosis of AML was given by the pathologist. A bone marrow smear was advised as it is the gold standard test for leukemia. It showed significantly depressed erythropoiesis and thrombopoiesis with 63% promyelocytes. A diagnosis of AML type M₃ acute promyelocytic leukemia (APML) was confirmed. The patient was immediately referred to the cancer department for treatment of leukemia.

Fig. 2: IOPA showing angular bone loss

DISCUSSION

Leukemia is a malignancy affecting the white blood cells of the bone marrow. This neoplastic process is characterized by differentiation and proliferation of malignantly transformed hematopoietic stem cells, leading to suppression of normal cells. The malignant cells replace and turn off the normal marrow elements causing anemia, thrombocytopenia, and a deficiency of normally functioning leukocytes. In time, the leukemic cells infiltrate other body organs, destroying normal tissues.²

It is classified as either acute or chronic and by cell type.² Acute leukemia is divided into acute lymphoid leukemia (ALL) and AML, which are further subdivided within the French-American-British (FAB) classification according to their degree of differentiation along cell lines and the extent of cell maturation. Acute myeloid leukemia is a clonal proliferation of immature myeloid cells and is further classified into eight subgroups according to the FAB system.³

The incidence of AML increases with age, with peak in the sixth decade and is more common in males.^{4,5} The etiology of leukemia, in most cases, is unknown, but several factors that increase the risk of the disease are well established. They range from exposure to ionizing radiation, certain chemicals like benzene, and drugs to genetic disorders like Down's syndrome.²

Early manifestations are pallor, purpura, bone pain, and fever, and hepatosplenomegaly oral involvement is common at this stage and features such as gingival enlargement, mucosal ulceration, bleeding, or opportunistic infections are occasionally the first overt signs.⁶ Laboratory finding in leukemia: The laboratory diagnosis of leukemia is made from the identification of abnormal hematopoietic cells in the peripheral blood and bone marrow.⁷

In dental radiographs, presentation of leukemia is varied. In acute leukemia it can be seen as ill-defined patchy radiolucent areas bilaterally or as widening of lamina dura and effacement of cortical outlines or loss of crestal bone.⁸ The treatment includes chemotherapy. In addition to chemotherapy, treatment of acute leukemia includes targeted therapy, radiation therapy, and the transplantation of hemopoietic stem cells. Without treatment,

Fig. 3: OPG showing angular bone loss and PDL widening

survival is measured in days to weeks in acute leukemia. Acute leukemia often compels the patient to seek dental care first making dentists responsible for initiating the diagnosis in 25–33% of patients with AML.^{9,10}

CONCLUSION

In AML, each and every day is important for the patient. We could have referred the patient to periodontology and would have wasted her precious days. There's no harm in basic blood investigations, which proved so helpful and revealed her underlying pathology. Hence, every patient should be seen cautiously and with suspicion. This can save someone's life. Our article highlights the value of systematic approach to prompt diagnosis.

REFERENCES

1. Gomes AOF, Silva Junior A, Noce CW, et al. The frequency of oral conditions detected in hematology inpatients. *Hematol Transfus Cell Ther* 2018;40(3):240–244. DOI: 10.1016/j.htct.2018.02.006.
2. Lewis MAO. Burket's oral medicine. Diagnosis and treatment. 10th ed. *J Orthod* 2003;30(4):346.
3. Dean A, Ferguson J, Marvanr E. Acute leukaemia presenting as oral ulceration to a dental emergency service. *Aust Dent J* 2003;48(3): 195–197. DOI: 10.1111/j.1834-7819.2003.tb00032.x.
4. Parisi E, Draznin J, Stoopler E, et al. Acute myelogenous leukemia: advances and limitations of treatment. *Oral Surg, Oral Med, Oral Pathol, Oral Radiol, Endodont* 2002;93(3):257–263. DOI: 10.1067/moe.2002.121988.
5. Jackson N, Menon BS, Zarina W, et al. Why is acute leukemia more common in males? A possible sex-determined risk linked to the ABO blood group genes. *Ann Hematol* 1999;78(5):233–236. DOI: 10.1007/s002770050507.
6. Odell EW. *Cawson's Essentials of Oral Pathology and Oral Medicine* e-book: Elsevier Health Sciences. 2017.
7. Deliverska EG, Krasteva A. Oral signs of leukemia and dental management—literature data and case report. *J IMAB* 2013;19(4): 388–391. DOI: 10.5272/jimab.2013194.388.
8. White SC, Pharoah MJ, White and Pharoah's Oral Radiology E-Book: Principles and Interpretation: Elsevier Health Sciences. 2018.
9. Berkheiser SW. Studies on the comparative morphology of monocytic leukemia, granulocytic leukemia, and reticulum-cell sarcoma. *Cancer* 1957;10(3):606–616. DOI: 10.1002/1097-0142(195705/06)10:33.0.co;2-s.
10. Stafford R, Sonis S, Lockhart P, et al. Oral pathoses as diagnostic indicators in leukemia. *Oral Surg Oral Med Oral Pathol* 1980;50(2): 134–139. DOI: 10.1016/0030-4220(80)90200-5.