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ORAL MANIFESTATION OF HEMATOLOGICAL DISORDER- A SHORT REVIEW

ABSTRACT
Haematological abnormalities are variable in nature which manifests in the oral cavity. The symptoms are non specific representing the initial sign of the underlying disease. The importance of understanding the oral manifestations lies in the fact that signs and symptoms may be the first clinical presentation that alerts the dentist/hematologist to an underlying hematological disorder.

Key words: Anaemia, oral ulceration, hemopoesis

1. INTRODUCTION

The diseases of the blood affects both hard and soft tissues of the oral cavity. The common oral manifestations of hematologic conditions of white blood cells includes cyclic hematopoiesis (cyclic neutropenia), leukemias, lymphomas, plasma cell dyscrasias, and mast cell disorders. Red blood cell disorders includes anemias, and less common red blood cell dyscrasias (sickle cell disease, hemochromatosis, and congenital erythropoietic porphyria) as well as thrombocytopenia[(1)].

2. RED BLOOD CELL DISORDERS

Anaemia

In anemia due to deficiency of iron, folate, or vitamin B12, the oral findings may be the initial presentation resulting in a decreased hemoglobin level or change in mean corpuscular volume.

Iron-deficiency anemia:-

Iron defieciency anaemia is the most common cause of anemia resulting from insufficient dietary intake or malabsorption of iron, chronic blood loss, hemolysis, and pregnancy. Iron-deficiency anemia shows nail findings such as splitting or spooning (koilonychia). The most common oral manifestation of iron-deficiency anemia is mucosal pallor on the gingivae and vermilion lips. Angular cheilitis and atrophic glossitis can also be seen in iron defieciency anaemia[(2)].

Megaloblastic anemia :-

This occurs due to defective DNA synthesis during erythropoiesis and most commonly results from vitamin B12 (cobalamin, cyanocobalamin) or folate deficiency. Megaloblastic anemia causes stomatitis, mucosal ulceration, atrophy of oral mucosa exhibited by glossitis and angular cheilitis The oral changes may occur in the absence of symptomatic anemia or of macrocytosis[3].

Sickle cell disease:-

Sickle cell disease is generically used to describe a group of disorders characterized by the production of abnormal hemoglobin S (HBS)[4]. The sickle hemoglobin abnormality is caused by substitution of valine for glutamic acid in the sixth position from the NH2 terminal end of the β-globin chain. Mandibular osteomyelitis is an oral complication commonly observed in patients with sickle cell anemia. Various other changes includes anesthesia or paraesthesia of the mental nerve, asymptomatic pulpal necrosis[5,6], orofacial pain, enamel hypomineralization and diastema

Aplastic anemia:-

It occurs due to failure of hematopoietic precursor cells in bone marrow to produce adequate number of all types of blood cells. The oral manifestations includes pallor of oral mucosa, petechiae, submucosal echymosis, gingival hyperplasia, gingival bleeding, oral candidiasis, herpetic lesion, ulcers covered with black or gray necrotic membrane[7,8].

Thalassemia: -

It is also called Cooley's anemia, Mediterranean anemia, erythroblastic anemia. It occurs when there is partial or complete failure to synthesize a specific type of globin chain. Beta thalassemia is more common than alpha thalassemia. The oral manifestations includes excessive overgrowth of maxilla leads to excessive lacrimation and nasal stiffiness, pallor oral mucosa[7].

3. WHITE BLOOD CELL DISORDER

Leukemias

The leukemias are malignancies of hematopoietic cells characterized by the proliferation of malignant leukocytes and destruction of the bone marrow. The neoplastic immature leukocytes (blast cells) appear in the peripheral blood, often resulting in an impressive leukocytosis. Patients may reveal mucosal pallor due to anemia, or bleeding and petechiae of the palate, tongue, or lips. Painful and deep oral ulcerations are common resulting from either neutropenia or direct infiltration by malignant cells[2,9]. Viral, fungal, and bacterial oral infections develops as a consequence of immunosuppression[2]. Gingival hyperplasia resultsing from leukemic infiltration is most common in the acute leukemias, particularly in acute monocytic leukemia and acute promyelocytic leukemia[10].

Cyclic hematopoiesis

Cyclic hematopoiesis is a rare disorder which is characterized by periodic failure of hematopoietic progenitor cells resulting in dramatic oscillations in neutrophil, monocyte, eosinophil, platelet, and reticulocyte counts[11]. Cyclic hematopoiesis is commonly seen in infants and children, but in few cases adult onset may occur[12]. The oral manifestations of cyclic hematopoiesis include recurrent aphthous stomatitis (RAS), recurrent gingivitis, and periodontitis[13,14].

Lymphomas

Lymphomas are malignancies of lymphocytes and their precursor cells. They develop in secondary lymphatic tissues,commonly in the lymph nodes and less frequently in extranodal lymph tissues. In NHL, oral involvement affects the lymphoid tissues of Waldeyer's ring as well as the vestibule and gingivae[15]. Painless, soft masses, with or without traumatic ulceration, may occur in palate, buccal mucosa, and gingivae.

Amyloidosis

The amyloidoses are a group of disorders characterized by pathologic deposition of fibrillar proteins. AL amyloidosis is the most common systemic amyloidosis affecting the oral cavity. Localized amyloidosis may also produce oral lesions. The oral manifestations of amyloidosis include macroglossia, edema, submucosal hemorrhage, glossodynia, taste disturbance, and xerostomia. Localized amyloidosis of the oral cavity is rare, but patients presents with soft, red, purple, or blue nodules on the buccal mucosa, tongue, gingivae and palate[16].

Langerhans cell histiocytosis

It is also known as histiocytosis X, Langerhans cell histiocytosis (LCH) is a rare disorder of unknown etiology involving the proliferation of Langerhans cells. The disease is characterized by destructive tissue infiltration by abnormal histiocytes mixed with lymphocytes and eosinophils. The lytic lesions of the maxilla or mandible, resulting in edema and ulceration , gingival inflammation, necrosis, tooth mobility and premature tooth loss is seen in 10-20% of cases[9,17].

4. PLATELET DISORDERS

Thrombocytopenia

It occurs due to the reduction in the functions and number of platelets. They manifest with petechiae, purpura, and bleeding of the mucous membranes. The first sign of thrombocytopenia is gingival bleeding The oral mucosa, soft palate and buccal mucosa, may demonstrate petechiae and ecchymoses. Deep red to black hemorrhagic bullae may occur with very low platelet counts[9].

5. CONCLUSION

The majority of the oral manifestations are non specific, such that the haematologist and dental surgeon should be alert regarding the concurrent disease of hemopoesis. Comprehensive history and clinical examination is important in evaluating the patients with haematological disorder. Proper diagnosis is important to initiate the treatment.

6. REFERENCES

[1] Schlosser, B. J., Pirigyi, M., & Mirowski, G. W. (2011). Oral Manifestations of Hematologic and Nutritional Diseases. Otolaryngologic Clinics of North America, 44(1), 183–203. doi:10.1016/j.otc.2010.09.007.
[2] Eisen D, Lynch DP. Oral manifestations of systemic diseases. the mouth: diagnosis and treatment. St. Louis (MO): Mosby; 1998. 212–36.
[3] Field EA, Speechley JA, Rugman FR, Varga E, Tyldesley WR. Oral signs and symptoms in patients with undiagnosed vitamin B12 deficiency. J Oral Pathol Med 1995;24:468-70
[4] Embury SH. The not so simple process of sickle cell vasoocclusion. Microcirculation 2004;11:101-13
[5] Friedlander AH, Genser L, Swerdloff M. Mental nerve neuropathy: A complication of sickle cell crisis. Oral Surg Oral Med Oral Pathol 1980; s49:15-7.
[6] Gregory G, Olujohungbe A. Mandibular nerve neuropathy in sickle cell disease: Local factors. Oral Surg Oral Med Oral Pathol 1994; 77:66-9
[7] Titilope A Adeyemo, Wasiu L Adeyemo, Adewumi Adediran, Abd Jaleel A Akinbami, Alani S Akanmu. Orofacial manifestations of hematological disorders: and hemostatic disorders. IJDR.2011; 22(3):454-61.
[8] Sepulveda E, Brethauer U, Rojas J, Le Fort P. Oral manifestation of Aplastic anaemia in children. J Am Dent Assoc 2006; 137:474-8.
[9] McKenna SJ. Leukemia. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2000; 89(2):137–9.
[10] Cooper CL, Loewen R, Shore T. Gingival hyperplasia complicating acute myelomonocytic leukemia. J Can Dent Assoc 2000; 66(2):78–9.
[11] Online Mendelian Inheritance in Man, OMIM (TM). Cyclic hematopoiesis. 2010. Available at: http://www.ncbi.nlm.nih.gov/omim/. Accessed June 29, 2010.

[12] Palmer SE, Stephens K, Dale DC. Genetics, phenotype, and natural history of autosomal dominant cyclic hematopoiesis. Am J Med Genet 1996; 66(4):413–22.
[13] Cohen DW, Morris AL. Periodontal manifestations of cyclic neutropenia. J Periodontol 1961; 32:159–68.
[14] Long LM Jr, Jacoway JR, Bawden JW. Cyclic neutropenia: case report of two siblings. Pediatr Dent 1983;5(2):142–4
[15] Bruch JM, Treister NS. Clinical oral medicine and pathology. New York: Humana Press; 2010.
[16] Aono J, Yamagata K, Yoshida H. Local amyloidosis in the hard palate: a case report. Oral Maxillofac Surg 2009;13(2):119–22
[17] Milian MA, Bagan JV, Jimenez Y, et al. Langerhans' cell histiocytosis restricted to the oral mucosa. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2001; 91(1):76–9.