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Oral manifestations in acute leukemia as the first sign; the interdisciplinary approach of diagnosis and treatment

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Abstract

Systemic diseases often present associated oral signs and symptoms, which can occur either from the beginning of the disease or during its evolution. In some cases the oral manifestations reveal an undetected and severe disease, like leukemia. According to the encountered oral signs and symptoms and their response to topical/ dental treatment, the dentist and physician should take into account specific additional tests, which could highlight a possible associated systemic disease.

The most frequent oral manifestations associated with leukemia are represented by paleness of oral mucosa/ local abnormal colour of the gum, gingival petechiae, ecchymosis, bleeding associating painless gingival hyperplasia, hemorrhages, ulcerative necrotic lesions and buccal infections. We presented in this paper the relevant literature data in respect to the oral manifestations encountered in leukemia, exemplified with two suggestive cases.

As a conclusion, dentists should be advised not only to recognize and treat the encountered oral lesions but also to refer the patient to specialized professionals for additional investigations, especially in the situation when suspect a severe systemic disease that require a precocious diagnosis or in the case when the establishment of diagnosis exceed the possibilities of the usual tests. Chemotherapy

administration in association with topical/ oral solutions often leads to total or partial remission of the oral signs and symptoms.

Introduction

Many systemic diseases associate various signs and symptoms related to oral cavity. In some cases these oral manifestations are the only ones that are present or detectable, so that they often contribute to diagnosis of the corresponding systemic disease. Periodontal lesions are relatively frequent encountered in patients with various forms of leukemia, occurring from the beginning or during the evolution of the disease.

According to oral manifestations that could be encountered, the physicians in general and dentists in particular can establish or direct towards a possible diagnosis of the systemic disease. The most frequent oral signs and symptoms encountered in acute leukemia are represented by paleness of oral mucosa/ local abnormal colour of the gum, gingival petechiae, ecchymosis, bleeding associating painless gingival hyperplasia, hemorrhages, ulcerative necrotic lesions and buccal infections.

Due to their clinical prognosis and significance, the oral signs and symptoms require a special attention of the dental physicians. The aim of this paper is to present some peculiarities of the oral manifestations in leukemic patients, as contributing factors for a precocious diagnosis of this systemic disease, and the interdisciplinary approach of diagnosis and treatment in patients with undiagnosed leukemia but with various manifestations at the level of oral cavity.

Discussion

Leukemia is a group of malignant hematologic diseases with mesenchymal (myeloid or lymphoid) origin originating from the bone marrow, which generates a high numbers of abnormal hematopoietic cells in respect to their proliferation, differentiation and programmed cell death (apoptosis) (1).

The etiology of leukemia is poorly defined, most authors considering that it is multifactorial. Thus, the risk factors are represented by smoking, ionizing radiation exposure, viral infections (Epstein-Barr), chemical compounds (benzene), chromosomal abnormalities (Down syndrome), or families with leukemic history/ members (2).

The classification of leukemia is according to clinical-behavioural and histopathological criteria, in: acute and chronic lymphoid leukemia, and in acute and chronic myeloid leukemia, respectively (3). The genesis of leukemic cells in detriment of normal hematopoietic cells lines leads to marrow deficiency, with decreasing of the blood cell count and subsequently complications such infection, (internal or external) bleeding and finally death. All these symptoms are due to lacking of normal blood cells (4).

The decreasing of platelets leads to blood clotting and petechiae. The decreasing of white blood cells exposes the patient to frequent infection, such as tonsils, oral sores, pneumonia, etc. Yet, the deficiency of the red blood cells causes anaemia and subsequently dyspnea and pallor. It can be present headaches, migraines, seizures, when leukemic cells invade the brain (5).

Usually the diagnosis is founded on blood tests and bone marrow biopsy. Therapeutic approach of leukemia involves chemotherapy, radiotherapy, bone marrow transplantation, and supportive/palliative care. Usually the most common applied is chemotherapy, but other additional therapeutic supports could be also necessary: transfusions of red blood cells or platelets, treatment with antibiotics to combat side effects of chemotherapy, etc. Chemotherapy involves most times three distinct steps: induction, followed by consolidation and finally the step of maintenance. Depending by case/ form of leukemia, the duration of chemotherapy can prolong until 2 years (6, 7).

In contrast to acute leukemia, the oral manifestations are non-specific and less common in patients diagnosed with chronic leukemia. The most frequent oral symptom encountered is gingival

enlargement, in some cases as the first symptom of acute leukemic disease, which alerts the patient who seek a dental consultation that leads to precocious diagnosis of leukemia (8). The oral lesions in acute leukemia can be explained through: a direct infiltration with leukemic cells of local tissues, through immunodeficiency, thrombocytopenia and anaemia.

In addition to gingival enlargement that is the most frequent, other oral manifestations could be represented by: local abnormal colour of the gum, gingival petechiae, ecchymosis, and/ or haemorrhage, mucosal ulceration and buccal infections. Dreizen et al. noted that gingival enlargement was encountered up to 4-5% on a sample of 1076 patients with acute leukemia (9). In most cases, the gingival enlargement disappear totally or partially after chemotherapy administration (10). These oral manifestations were reported for acute lymphoblastic leukemia (8), acute myeloblastic leukemia (11), acute myelomonocytic leukemia (12), acute myeloid leukemia (13, 14), and acute lymphoblastic leukemia (14). The specific/ local treatment methods of oral lesions include: oral hygiene, topical solutions, gingivectomy, etc. Dental physicians often resort to interdisciplinary consults, to



Figure 1a



Figure 1b



Figure 1c

In the above figures there are presented oral manifestations encountered in a 47 years old patient with acute myeloblastic leukemia, consisting in generalized gingival enlargement, ulcerations covered by fibrinous deposits, spontaneous and induced bleedings.

complete his oral diagnosis and treatment with specific procedures (as described above) that could highlight/ contribute to diagnosis of a possible coexisting systemic disease, such as leukemia. In our practice the most required were hematologic evaluations/ consults, but we had also cases who developed depressive symptoms (that required psychological/ psychiatric support) when were informed about possibility that a severe systemic disease could coexist (15).

Conclusions

As a conclusion, dentists should be advised not only to recognize and treat the oral lesions which are encountered, but also to refer the patient to specialized professionals for additional tests/ investigations when suspect that a systemic disease would be the cause of the respective oral manifestations (16).

In respect to oral lesions due to acute leukemia, the gingival enlargement (the most frequent encountered) disappeared totally or partially after administration of chemotherapy and topical/ oral solutions. Such cases require in our opinion an interdisciplinary approach for a complete diagnosis and therapeutic management, including but not necessarily limited to: dental physicians, haematologists, psychologists and internists (for coexisting affections- heart, lung, etc.) (17).



Figure 2 (before treatment)



Figure 3 (after treatment)

In the above figures there are presented oral manifestations encountered in a 16 years old patient with acute lymphoblastic leukemia, consisting in generalized gingival enlargement, superficial and deep ulcerations, and spontaneous bleedings.

Disclosure

No authors involved in the production of this article have any commercial associations that might pose or create a conflict of interest with information presented herein.

References

1. Chandran P, Le Y, Li Y, Sabloff M, Mehic J, Rosu-Myles M, Allan DS. Mesenchymal stromal cells from patients with acute myeloid leukemia have altered capacity to expand differentiated hematopoietic progenitors. *Leuk Res.* 2015, 39(4): 486-93.
2. Rashid A, Lee NG, Jakobiec FA, Freitag SK. Epstein-Barr virus-positive polymorphous lymphoplasmacytic infiltrate of the lacrimal glands in a patient with acute lymphoblastic leukemia. *JAMA Ophthalmol.* 2014, 132(7): 892-4.
3. Haouas H, Haouas S, Uzan G, Hafsia A. Identification of new markers discriminating between myeloid and lymphoid acute leukemia. *Hematology* 2010, 15(4): 193-203.
4. El Rassi F, Arellano M. Update on optimal management of acute myeloid leukemia. *Clin Med Insights Oncol.* 2013, 7: 181-97.
5. Burry LD, Seki JT. CNS relapses of acute promyelocytic leukemia after all-trans retinoic acid. *Ann Pharmacother.* 2002, 36(12): 1900-6.
6. Tefferi A, Pardanani A. Myeloproliferative Neoplasms: A Contemporary Review. *JAMA Oncol.* 2015, 1(1): 97-105.
7. Sun C, Wiestner A. Prognosis and therapy of chronic lymphocytic leukemia and small lymphocytic lymphoma. *Cancer Treat Res.* 2015, 165: 147-75.
8. Vashisht N, Kiran AR, Vashisht D. Gingival Enlargement Leading To the Diagnosis Of Acute Lymphoblastic Leukemia In An 8-Year Old Girl: A Case Report. *Journal of Dental and Medical Sciences* 2013, 7(4): 67-70.

9. Dreizen S, McCredie KB, Keating MJ and Luna MA. Malignant gingival and skin “infiltrates” in adult leukemia. *Oral Surg Oral Med Oral Pathol* 1983, 55: 572-579.
10. Curtis L. Cooper, Ruth Loewen. Gingival Hyperplasia Complicating Acute Myelomonocytic Leukemia. *J Can Dent Assoc* 2000, 66: 78-9.
11. Varsha J, Jadhav S, Sukhdeo A, Kapil S, Neeraj T. A Case of Diffuse Gingival Enlargement in Acute Myeloblastic Leukemia (AML M1). *Int J. of Sci. Study* 2014, 1(5): 40- 43.
12. Cooper CL, Loewen R, Shore T. Gingival Hyperplasia Complicating Acute Myelomonocytic Leukemia. *J Can Dent Assoc* 2000; 66:78-9.
13. Soheylifar S, Vahedi M, Kadkhodazadeh M, Bidgoli MJ. A Case of Gingival Enlargement in Acute Myeloid Leukemia, *J Periodontol Implant Dent* 2009, 1(1): 48-50.
14. Patil S, Kalla N, Ramesh DN, Kalla AR. Leukemic gingival enlargement: a report of two cases. *Archives of Orofacial Sciences* 2010, 5(2): 69-72.
15. Dumitriu HT. *Tratat de parodontologie*. Editura: Viata Medicala Romaneasca, 2015, ISBN: 973-160-088-8.
16. Paunica S. *Manifestari gingiva-parodontale in leucemii*, Editura: Didactica si Pedagogica 2008, ISBN: 973-30-2100-1
17. Dumitriu AS, Paunica S, Giurgiu MC, Cureu M. *Mariri de volum gingival*. Editura: Didactica si Pedagogica 2013, ISBN: 978-973-30-3550-3.