

ORAL SIGNS OF LEUKEMIA AND DENTAL MANAGEMENT – literature data and case report

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ABSTRACT:

The oral signs and symptoms may be reflect a undetected serious systemic diseases. Depending on the oral manifestation the dentists and physicians make attention and focusing on specific diagnoses. In some cases oral involvement may be frequently herald the onset of the disease which requires the dentists to better knowledge of changes in the oral cavity.

In the oral cavity local symptoms and findings of leukemia include paleness of the oral mucosa with gingival bleeding that develops into painless gingival hyperplasia, petechiae, hemorrhages, and ulcerative necrotic lesions

Because of their clinical importance, all such lesions deserve the full attention of the dental doctors.

The aim is to evaluate in detail the oral complications of leukemia at initial presentation and present a clinical case of 54 old female with oral manifestation as initial signs of the disease.

Key words: oral manifestation, leukemia, dentist, management

INTRODUCTION:

There are three main groups of hematologic malignancies: leukemia, lymphoma and plasma cell tumors. Leukemia is a hematological disorder which is caused by proliferating white blood cell-forming tissues resulting in a marked increase in circulating immature or abnormal white blood cells. Leukemia arises from a hematopoietic stem cell characterized by a disordered differentiation and proliferation of neoplastic cells. Leukemia results from the proliferation of a clone of abnormal hematopoietic cells with impaired differentiation, regulation, and programmed cell death (apoptosis). Leukemic cell multiplication at the expense of normal hematopoietic cell lines causes marrow failure, depressed blood cell count (cytopenia), and death as a result of infection, bleeding, or both [1, 2].

The cause of leukemia remains unknown. Increased risk is associated with large doses of ionizing radiation, certain chemicals (benzene), and infection with specific viruses (e.g., Epstein-Barr virus, human lymphotropic virus. Cigarette

smoking and exposure to electromagnetic fields also have been proposed to be causative (3).

Classification of Leukemia

Leukemia is classified based on clinical behavior (acute or chronic) and the primary hematopoietic cell line affected (myeloid or lymphoid). The four principal diagnostic categories are the following [3, 4]:

1. acute myelogenous leukemia (AML),
2. acute lymphocytic leukemia (ALL),
3. chronic myelogenous leukemia (CML) and
4. chronic lymphocytic leukemia (CLL).

Clinical symptoms

Chronic leukemia, with a less pronounced marrow failure, has an indolent course that usually lasts several years. Symptoms are generally flu-like with bone pain, joint pain, or both, caused by malignant marrow expansion [1, 4].

Acute myelogenous leukemia symptoms include fever, fatigue, pallor, mucosal bleeding, petechiae, and local infections; clinical manifestations of acute lymphocytic leukemia are similar to those of acute myelogenous leukemia, but with a high incidence of central nervous system disease [1, 4].

Laboratory finding in leukemia

In patients with leukemia the overgrowth of malignant hematopoietic cells in the bone marrow with subsequent spillage into the peripheral blood leads to a reduction in the number of normal circulating blood cells. Patients can present with symptoms related to anemia, neutropenia, and thrombocytopenia [1, 2, 5, 6].

The peripheral granulocyte count is markedly elevated in chronic leukemia but may be increased (with numerous blast forms), decreased, or normal in acute leukemia. The laboratory diagnosis of leukemia is made from the identification of abnormal hematopoietic cells in the peripheral blood and bone marrow. Further characterization is by cytochemical staining (myeloperoxidase, Sudan black B), immunophenotyping (cell surface markers, cytoplasmic immunoglobulin, terminal deoxynucleotide transferase

detection), and cytogenetic analysis of chromosomal abnormalities [3].

Oral manifestation of leukemia

65% of patients with leukemia reviewed in the course of their disease oral signs or symptoms.

Gingival bleeding, petechiae, ecchymosis

Thrombocytopenia is manifested in the oral cavity of petechiae, ecchymosis, and gingival hemorrhage or gingival bleeding [1, 7, 8, 9, 10].

Ecchymosis is included in the differential diagnosis, a hemorrhagic diathesis or coagulation disorder. Certainly, patients taking anticoagulant drugs may present with oral ecchymosis, particularly on the buccal mucosa or tongue, either of which can be traumatized while chewing. Ecchymoses of the oral mucosa may also be encountered in patients with liver cirrhosis, and end-stage renal disease undergoing dialysis treatment [3,7].

Gingival Enlargement

Gingival enlargement or overgrowth is usually caused by local inflammatory conditions such as poor oral hygiene, food impaction, or mouth breathing. Systemic conditions such as hormonal changes, drug therapy, or tumor infiltrates may also cause or contribute to the severity of gingival enlargement. [3, 11, 12]. Gingival hyperplasia can be detected in von Recklinghausen's neurofibromatosis (neurofibromatosis 1), Wegener's granulomatosis, sarcoidosis, Crohn's disease, primary amyloidosis, Kaposi's sarcoma, acromegaly, and lymphoma and patients with leukemia [2, 3, 7, 8].

Gingival hyperplasia secondary to infiltration of the gingival tissue with leukemia cells is thoroughly described in the literature. It is characterized by progressive enlargement of the interdental papillae as well as the marginal and attached gingiva. In the condition's most pronounced form, the crowns of the teeth may be covered. Gingiva appear swollen, devoid of stippling and pale red to deep purple in colour. Gingival infiltration by leukemic cells will also predispose the patient with leukemia to bleeding [1].

Gingival hyperplasia is more common in acute than chronic leukemia nonetheless; the development of gingival infiltration is unpredictable in any individual patient. Generally, gingival hyperplasia resolves completely or at least partly with effective leukemia chemotherapy [1, 7, 9].

Gingival ulceration and oral infection

Oral signs and symptoms in leukemia may consist of paleness of the oral mucosa and also mucosal ulcers. Oral infections often present atypically, for example dental abscesses may present as soft tissue necrosis without swelling, and recrudescing HSV, may present with widespread lesions

affecting both the keratinized and nonkeratinized mucosa and oral colonization by *Candida albicans* [4, 5, 6, 7, 9].

AIM:

The aim of this article is to evaluate in detail the oral complications of leukemia at initial presentation and present a clinical case of 54 y old female with oral manifestation as initial signs of the disease. Associations between oral manifestations dental management were also comment.

CASE REPORT:

A 54-year-old woman applied to Medical University, Faculty of Dentistry, Department of Oral and Maxillofacial surgery, with the chief complaint of severe gingival hyperplasia with rapid development in four weeks time.

Extra-oral examination revealed swelling and tenderness to palpitation of the cervical lymph nodes.

Dental examination showed a prominent generalized gingival hyperplasia without bleeding on the maxilla and mandibula. Gingival hyperplasia was involving the buccal, lingual and palatal aspects, as well.

In medical examination, the patient mentioned clinical symptoms such as fatigue, nausea, vomit, anorexia, and weight loss in a month. Complete blood count, peripheral blood smear were taken from the patient. Complete blood count displayed lowered hematocrit and hemoglobin levels (anemia); and a low platelet count (thrombocytopenia), white blood cell levels were **99,2610/9/ 1**, and a decrease in neutrophil levels (neutropenia).

The results confirmed the diagnosis of acute leukaemia and the patient was immediately admitted to the oncology unit of a general hospital for bone marrow biopsy and further management.



Fig. 1.



Fig. 2.

Figure 1 and figure 2. Initial intra-oral view of the patient.

DISCUSSION:

The oral manifestation of leukemia depend on the general status of patients. For instance before treatment leukemic infiltrates cause a wide range of oral disease. Typical oral manifestations of acute leukaemias include gingival swelling, oral ulceration, spontaneous gingival bleeding, petechiae, mucosal pallor, herpetic infections and

candidosis [4, 5, 6, 7, 13, 14]. Advanced cases may involve malaise, cervical lymphadenopathy, laryngeal pain and fever [8, 15]. Cervical lymphadenopathy, caused by infiltration of leukemic cells into the regional lymph nodes and hyperplasia of lymphatic issue particularly in Waldeyers ring. Enlarge tonsils and pharyngitis may be the initial complaint. Other uncommon orofacial signs of leukemia are pallor, parotid swelling and palatal pigmentation [16]. Radiographically leukemic infiltrates may produce destructive radiolucencies with loss of the lamina dura and erosion of the crestal alveolar bone [17, 18].

Later once medial therapy has been initiated manifestation of leukemia are often replaced by the effects of chemotherapy and total body irradiation because these agents are toxic to rapidly dividing cells both cancer cells and normal cells. Complications of chemotherapy and irradiation include mucositis, hemorrhage, xerostomia, periodontal inflammation, recurrent herpes simplex virus infection and bacterial and fungal infections [18]. Based on these complication was established protocol for monitoring patients with leukemia.

Dental management of patient with hematologic malignancies

Considerations in dental management of patients with hematologic malignancies [1] are summarized in table 1.

Tabl. 1 Considerations in dental treatment of patients with hematologic malignancies by FA Mancheño et coworkers.

Prior to dental treatment	During dental treatment
1. Dental treatment should be performed always after consultation with the specialist 2. It is important to carry out a detailed history, a comprehensive oral and dental evaluation and a complete radiographic exam. 3. Dental treatment should be performed before starting the chemo/radiotherapy. 4. Patients in long-term remission can undergo dental treatment, while patients with advanced or relapsed disease with reserved prognosis should receive palliative or urgent treatment only.	1. Bleeding tendency 2. Increased risk of infection. 3. Risk of developing osteonecrosis of the jaw. 4. Anemia 5. Corticosteroids treatment. 6. Secondary malignancies. 7. Specific considerations.

Once the diagnosis has been made, consultation with the patient physician or oncologist is mandatory before commencing dental treatment.

The main problems in dental treatment of patients with hematologic malignancies of white cells are:

- Bleeding tendency
- Increased risk of infection - odontogenic infections and opportunistic infections:
- Risk of developing osteonecrosis of the jaw
- Anemia
- Corticosteroids treatment - may display evidence of

- secondary adrenal insufficiency.
- Secondary malignancies

Specific considerations:

- Patients with renal dysfunction may require modified dosing intervals of medications.
- In patients with multiple myeloma, it is important to evaluate for presence of hard/soft tissue masses that could indicate deposition of plasma cells and/or light chain associated amyloid, and biopsy if necessary. Patients with multiple myeloma and significant bone pain, especially in the

back, may need frequent breaks and may require frequent repositioning during dental treatments undergoing orthodontic treatment, the removal of orthodontic appliances and delivery of retainers is recommended, as well as the postponement of orthodontic treatment until the patient has finished immunosuppressive therapy and the risk of hematologic relapse requiring further intervention is reduced [1].

CONCLUSIONS:

Oral health care professionals should be aware of the

importance of recognizing oral manifestations of systemic diseases. The dentist, and mainly the periodontists and oral pathologist, plays a fundamental role in the early diagnosis of leukemia knowing that the first symptoms of the disease occur in the oral cavity with normal or show subtle changes in initial laboratory tests. It is essential for the professional to be able to clearly recognize oral physiological characteristics, and, when identifying a change of normalcy, to fully investigate it requesting additional tests or referring the patient to specialized professional.

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