Original Article
Middle East Journal of Cancer; July 2014; 5(3): 145-149

Prevalence of Oral and Craniofacial Manifestations of Hematological Dyscrasias at Shiraz Nemazee Hospital

Janan Ghapanchi[*], Mostafa Rezaee[*], Fereshteh Kamali[**], Fatemeh Lavaee[*♦], Eissa Shakib[***]

**Department of Oral & Maxillofacial Disease, School of Dentistry, Shiraz University of Medical Sciences, Shiraz, Iran*
***Department of Oral Pathology, School of Dentistry, Shiraz University of Medical Sciences, Shiraz, Iran*
****School of Dentistry, Shiraz University of Medical Sciences, Shiraz, Iran*

Abstract

Background: Hematological disorders may present with a number of non-specific orofacial manifestations that must be diagnosed and referred to specialists for treatment. Since the orofacial manifestations can be the first clinical presentation which indicates the presence of an underlying disease, it is important for dentists to be aware of these manifestations. The present study aims to evaluate the orofacial presentations of some hematological diseases in order to familiarize dentists with these manifestations.

Methods: This descriptive cross-sectional study evaluated the oral conditions of patients recently hospitalized with histories of blood dyscrasia and bone marrow transplantation in Shiraz Nemazee Hospital during 2010-2011. From 50 patients, there were 33 (66%) males and 17 (34%) females. The age of participants ranged from 12-77 years of age.

Results: Examined patients had the following manifestations: head and neck region lymphadenopathy (42%), hairy tongue, atrophy of the oral mucosa, ulcers, red and white lesions, Candida albicans infection and gingival lesions that included spontaneous gingival bleeding, gingival hypertrophy and ecchymosis, in addition to diffuse herpetic infections on the buccal mucosa and bony lesions. The most common blood dyscrasia in the study patients was acute myeloid leukemia (AML) (48%). Our findings determined that lymphadenopathy (42%) was the most common orofacial manifestation of hematological diseases.

Conclusion: On occasion, dentists maybe the first medical professional to encounter hematological diseases. Since early detection of these disorders can increase patient survival, it is necessary for dentists to become completely familiar with these oral manifestations.

Keywords: Oral manifestation, Leukemia, Thalassemia, Hematologic dyscrasias

♦Corresponding Author:
Fatemeh Lavaee, DMD
Department of Oral & Maxillofacial Disease, School of Dentistry, Shiraz University of Medical Sciences, Shiraz, Iran
Tel: +989177029159
Email: Fatemeh.lavaee@yahoo.com

Received: December 16, 2013; Accepted: February 16, 2014

Introduction

Hematological disorders may present with non-specific orofacial manifestations. Acute and chronic myeloid leukemias (AML and CML) comprise a wide range of diseases that consist of malignant leukemic cells which infiltrate into the hematopoietic system, brain, bone and other tissues.[1,2]

Malignant lymphoid cells cause a range from non-symptomatic to invasive cancers. The body's defense cells are involved in this disease at different grades of differentiation. Some malignancies present as leukemias (bone marrow or hematopoietic involvement) and others are lymphomas (solid lymphoid system cancer). Acute lymphoid leukemia (ALL) is more common in children and young adults whereas chronic lymphoid leukemia (CLL) is a disease of older adults with a high survival rate.[3,4]

Lymphomas are neoplasms of the lymphoid tissue. They include B cell, T cell, mucosa associated lymphoid tissue (MALT), and plasma cell origin. The most common types of lymphoid tissue neoplasias are Hodgkin's lymphoma, non-Hodgkin's lymphoma, Burkitt's lymphoma and multiple myeloma.[4] Hodgkin's lymphoma is an uncontrolled proliferation of B cells which is more common in young adults,[5] whereas multiple lymphoproliferative diseases of B and T cells are classified as non-Hodgkin's lymphoma. The B cell type of non-Hodgkin's lymphoma is more common. The head, neck and oral cavity are less common sites for non-Hodgkin's lymphoma.[4,6] Multiple myeloma is a lymphoproliferative disease with malignant proliferation of monoclonal plasma cells.[7]

Numerous studies have evaluated orofacial manifestations of several hematologic diseases and reported that gingival enlargement is one of the most common manifestations.[8-10] Intraosseous lesions are other reported symptoms.[11]

Orofacial manifestations should be diagnosed as soon as possible with rapid referral to a specialist for treatment. These manifestations may be the first clinical presentation that can guide dentists to the presence of an underlying disease. Hence it is important for dentists to be aware of orofacial manifestations. The present study aims to evaluate orofacial presentations of some hematological diseases.

Materials and Methods

This descriptive cross-sectional study included all patients hospitalized with a history of blood dyscrasia and bone marrow transplantation in Shiraz Nemazee Hospital during 2010-2011. All participants signed a study-related informed consent. Oral manifestations of these patients were evaluated by an oral medicine specialist and last year medical student.

The oral condition of 50 patients compatible with this study's inclusion criteria were evaluated for any abnormal changes, bleeding and other manifestations. We recorded patients' age, sex, duration of illness, type of hematological disease, location of any oral lesion or abnormality, types of medications used in chemotherapy, history of drug and alcohol consumption, presence of lymphadenopathy, and presence or absence of dentures. The cervical, submandibular and submental lymph nodes were carefully examined for the presence of any lymphadenopathy. All patients who had blood dyscrasia and those who underwent bone marrow transplantation due to thalassemia or other malignancies were included in the study.

Patients with other diseases attributed to oral symptoms were excluded from the study. All findings were recorded and statistically analyzed by SPSS software version 15.

Results

From 50 patients, there were 33 (66%) male and 17 (34%) female patients. Patients' ages ranged from 12-77 years. There were 25 patients who received chemotherapy, and 18 had histories of cigarette smoking and alcohol consumption. A total of 17 patients wore dentures. The majority of patients exhibited disease symptoms from 2-48 months. The patients' hematological disorders are listed in Table 1.

Table 1. Hematological diseases of the study participants.

Diseases	ALL	AML	CLL	Hodgkin's lymphoma	Non- Hodgkin's lymphoma	Multiple myeloma	Thalassemia (major) bone marrow transplant	Hairy cell
Patients	5	24	5	8	1	2	4	1
	(10%)	(48%)	(10%)	(16%)	(2%)	(4%)	(8%)	(2%)

There were oral symptoms or lymph node enlargement in 9 patients. A patient with Hodgkin's lymphoma had a nodular exophytic lesion located on the skin of his head and neck. We observed head and neck lymphadenopathy in 21(42%) patients. Hairy tongue, atrophy of oral mucosa, ulcers, red and white lesions, candidal infection and tongue hematoma were oral findings in 13 (26%). Gingival lesions were observed in 11(22%) patients and included spontaneous gingival bleeding, gingival hypertrophy and ecchymosis. In 6 patients white keratotic lesions, red erosions, ulcers and diffused herpetic infections were observed on their buccal mucosa. Mandibular ridge lesions were noted in 2 patients, of which one had a white keratotic plaque under his denture. There was one patient with white and red ulcers, purpura and an ulcerated nodule on the hard palate. Mandibular fracture and severe bleeding following a tooth extraction were the first signs of CLL in a 67-year-old male.

Discussion

According to the results of this study the most common blood dyscrasia in patients who presented to the Hematology Department of Nemazee Hospital was AML (48%), which confirmed the results of other studies.[1,4,5,12-14] Our findings showed that the most common orofacial manifestation of hematological diseases was lymphadenopathy (42%). In numerous studies that focused on oral findings more reports discussed the prevalence of gingival enlargement.[8-10,14-16] Our study reported a significant prevalence of gingival involvement among patients. Other common oral manifestations were hairy tongue, oral mucosa atrophy, ulcers, red and white lesions, Candida albicans infection and tongue hematoma. Other studies also reported these symptoms.[10,15,17] Gingival lesions that included spontaneous gingival bleeding and ecchymosis were observed as previously reported.[15,18] A number of articles[15,19] had similar findings to the current study in terms of the prevalence of white and red keratotic erosions, ulcers and plaques in patients who underwent bone marrow transplants. We observed more diffused herpetic infections on the buccal mucosa in hematologic involved patients, which supported the results of other articles.[17,18] Other researchers have observed exophytic nodules, some local swellings in the oral cavity, Intraosseous lesions and alveolar bone destruction as confirmed by our study.[11,15] The consequences of low salivary rate on teeth was assessed.[15,17]

Treatment of these patients is associated with numerous complications. Drug-induced gingival overgrowth, post-transplantation lymphoproliferative disorders, oral lichenoid lesions of graft-versus-host disease (GVHD), lip or oral cancers, pyogenic granuloma and hairy leukoplakia, as well as the subsequent side effects of human stem cell transplant (HSCT) have been mentioned by Petti et al.[10]

Javed et al. discussed other oral inflammatory conditions such as gingivitis and periodontitis. Distortion of tooth morphology such as agenesis, microdontia, short roots and enamel, and dentin developmental defects in children with ALL have been reported. Microdontia can lead to malocclusion and temporomandibular joint disorders and should be further investigated.[17] This paper did not report tooth formation disturbances.

There is scant information available regarding neurological disturbances such as facial paralysis, trigeminal neuralgia, paresthesia or anesthesia of the face and tongue, or overall weakness of swallowing from acute infiltration of leukemic cells around the central and peripheral nerves.[15]

The current research was performed over a limited period of time in a local center. Other studies should conduct extensive evaluations on more patients over an extended period of time. It is better to examine patients, if it possible, immediately after diagnosis of the blood malignancies and prior to the onset of treatment in order to monitor their oral and cervicofacial manifestations. In this research, however, we were unable to conduct an examination at this time due to the urgency in management of these patients. Some of findings of this study could be attributed to treatment complications that resulted from chemotherapy or transplant-induced lesions. This study aimed to familiarize dentists with oral manifestations of hematological malignancies and post-treatment complications.

We propose that patients with chronic oral ulcers; longstanding head and neck lymphadenopathies; gingival and mucosal bleeding; gingival hypertrophy; deep seated infections; masses in the jaw, skin or soft tissue; and those with difficult to treat viral, bacterial and fungal infections undergo a CBC test and consultation with hematologic specialists.

Conclusion

As the results of this study and other studies have shown, there are numerous oral manifestations reported for malignant hematological diseases and thalassemia. Dentists maybe the first person who meets these hematological diseases. Early detection of these disorders can increase patient survival, thus dentists must be completely familiar with these oral manifestations.

As these disorders may have a wide range of representations, it is advisable to have more investigations on greater population, about more hematologic disorders and using more advanced examination techniques in order to have more data about oral manifestations of hematologic diseases

Acknowledgement

We express our appreciation to the Vice Chancellor for Research, Shiraz University of Medical Sciences for cooperation in preparation of this manuscript. This article has been extracted from a doctoral thesis (#1052) by Dr. Eissa Shakib of the School of Dental Medicine, Shiraz University of Medical Science, Shiraz, Iran.

Conflict of Interest

No conflict of interest is declared.

References

1. Wetzler M, Marcucci G, Bloomfield C. Acute and chronic myeloid leukemia. In: Lango DL, Fauci AS, Kasper DL, Hauser SL, Jameson JL, Loscalzo J, editors. Harrisons Principles of Internal Medicine. 18th ed. New York: McGraw-Hill; 2012. P.905-18.
2. Hehlmann R, Hochaus A, Baccarani M. Chronic myeloid leukemia. *Lancet.* 2007;370(9584):342-50.
3. Pui C-H, Relling MV, Downing JR. Acute lymphoblastic leukemia. *N Engl J Med.* 2004;350 (15):1535-48.
4. Kumar V, Abbas AK, Aster JC. Diseases of white blood cells, lymph nodes, spleen and thymus.In: Kumar V, Abbas AK, Aster JC, editors. Robin and Cotran Pathologic Basis of Disease, 9th ed. Philadelphia: Saunders;2015.P.579-628.
5. Longo D. Malignancies of lymphoid cells. In: Lango DL, Fauci AS, Kasper DL, Hauser SL, Jameson JL, Loscalzo J, editors. Harrisons Principles of internal Medicine. 18th ed. New York: McGraw-Hill; 2012. P. 919-35.
6. Melbye M, Smedby K, Trichopoulos D, Adami H, Hunter D. Non-Hodgkin lymphoma. In: Trichopoulos D, Adami HO, Hunter DJ , editors. Textbook of cancer epidemiology. 2nd ed. Oxford: Oxford University Press; 2008 .P.669-93.
7. Dispenzieri A, Kyle RA. Multiple myeloma: clinical features and indications for therapy. *Best Pract Res Clin Haematol.* 2005;18(4):553-68.
8. Silva BA, Siqueira CR, Castro PH, Araujo SS, Volpato LE. Oral manifestations leading to the diagnosis of acute lymphoblastic leukemia in a young girl. *J Indian Soc Pedod Prev Dent.* 2012;30(2):166-8.
9. Sepulveda E, Brethauer U, Fernandez E, Cortes G, Mardones C. Oral manifestations as first clinical sign of acute myeloid leukemia: report of a case. *Pediatr Dent.* 2012;34(5):418-21.
10. Petti S, Polimeni A, Berloco PB, Scully C. Orofacial diseases in solid organ and hematopoietic stem cell transplant recipients. *Oral Dis.* 2013;19(1):18-36.
11. Cox DP, Treseler P, Dong R, Jordan RC. Rare oral cavity presentation of a B-cell lymphoblastic lymphoma. A case report and review of the literature.

Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 2007;103(6):814-9.
12. Henry P.K, Lango D. L. Enlargement of lymphnodes and spleen. In: Lango DL, Fauci AS, Kasper DL, Hauser SL, Jameson JL, Loscalzo J, editors. Harrison's Principles of Internal Medicine, 18th ed. New York: McGraw-Hill; 2012.P. 465-71.
13. Adeyemo TA, Adeyemo WL, Adediran A, Akinbami AJ, Akanmu AS. Orofacial manifestation of hematological disorders: hemato-oncologic and immuno-deficiency disorders. *Indian J Dent Res.* 2011;22(5):688-97.
14. Menezes L, Rao JR. Acute myelomonocytic leukemia presenting with gingival enlargement as the only clinical manifestation. *J Indian Soc Periodontol.* 2012;16(4):597-601.
15. Adeyemo TA, Adeyemo WL, Adediran A, Akinbami AJ, Akanmu AS. Orofacial manifestations of hematological disorders: anemia and hemostatic disorders. *Indian J Dent Res.* 2011;22(3):454-61.
16. Gowda TM, Thomas R, Shanmukhappa SM, Agarwal G, Mehta DS. Gingival enlargement as an early diagnostic indicator in therapy-related acute myeloid leukemia: A rare case report and review of literature. *J Indian Soc Periodontol.* 2013;17(2):248-52.
17. Javed F, Utreja A, Bello Correa FO, Al-Askar M, Hudieb M, Qayyum F, et al. Oral health status in children with acute lymphoblastic leukemia. *Crit Rev Oncol Hematol.* 2012;83(3):303-9.
18. Herget GW, Riede UN, Schmitt-Graff A, Lubbert M, Neumann-Haefelin D, Kohler G. Generalized herpes simplex virus infection in an immunocompromised patient--report of a case and review of the literature. *Pathol Res Pract.* 2005;201(2):123-9.
19. Barrett AP. A long-term prospective clinical study of orofacial herpes simplex virus infection in acute leukemia. *Oral Surg Oral Med Oral Pathol.* 1986;61(2):149-52.