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Case Report

Denture Stomatitis with Diabetes Mellitus and Anemia: A Case Report

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KEYWORDS

Denture stomatitis, diabetes mellitus, ill-fitting denture, anemia, oral health, systemic disease

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ABSTRACT

Introduction: Denture stomatitis (DS) is a common problem among denture wearers. It usually appears as redness or inflammation of the oral mucosa that encounters the denture base. The causes are often not limited to one factor. Poor denture hygiene, wearing dentures continuously, and ill-fitting dentures are common triggers. However, systemic conditions such as diabetes mellitus can also play a major role by reducing the body's ability to fight infection. **Case Report:** A 54-year-old woman presented to the Dental Hospital at Universitas Syiah Kuala with complaints of redness on the hard palate. She mentioned that her denture had become loose and often fell out when she talked or chewed food. Intraoral examination revealed diffuse erythematous, measuring >2 cm, red in color, number 2 (bilateral), irregular edges, located on the hard palate. Atrophic lesions, flat, measuring ±3x5cm, red in color, multiple, with diffuse borders and irregular edges, located on the dorsal surface of the tongue. Blood examination revealed elevated blood glucose and HbA1c levels, along with low hemoglobin, hematocrit, Mean Corpuscular Volume (MCV), and Mean Corpuscular Hemoglobin (MCH) values. Based on the patient's history, clinical features, and laboratory results, the case was diagnosed as denture stomatitis type II (Newton's classification) associated with diabetes mellitus and mild anemia**.** The patient was treated with Nystatin oral suspension and Chlorhexidine Gluconate 0.2%**,** blood glucose control and improved nutrition were emphasized to support the healing process and enhance systemic health. In addition, the patient was advised to adjust the denture**.** **Conclusion:** Management of this condition must be comprehensive, starting with proper diagnosis of the causative and risk factors, then directing treatment to the most significant factors specific to the patient.

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INTRODUCTION

The oral cavity contains a variety of *Candida* species, including *Candida albicans*, *Candida tropicalis*, and *Candida glabrata*. However, the most common opportunistic fungus species, accounting for 45–65% of healthy individuals, is *Candida albicans*.[1] An infection with *Candida albicans* primarily causes denture stomatitis.[2] Denture Stomatitis is a frequent condition that affects people who wear dentures.[3] Systemic risk factors, including immunosuppression, immunodeficiency, nutritional deficiencies, and hematological abnormalities, contribute to lowering an individual's capacity to fight against illness.[4]

Diabetes mellitus is an endocrine disorder characterized by a decrease in insulin synthesis, which affects the absorption, metabolism, and regulation of blood glucose levels.[5] The World Health Organization (WHO) defines anemia as having a hemoglobin concentration of less than 12 g/dL in women and less than 13 g/dL in males.[6] Oral candidiasis, erythematous mucositis, angular cheilitis, pallor of the oral mucosa, glossitis, glossodynia, and recurring oral ulcers are all indications of anemia.[7]

This case report aims to illustrate the clinical relationship between denture stomatitis and systemic disease, particularly diabetes mellitus and anemia, and to highlight the importance of comprehensive patient evaluation and management.

CASE REPORT

A 54-year-old female presented to the Dental Hospital Universitas Syiah Kuala with a chief complaint of redness on the palate. The patient's dental history includes wearing dentures for 5 years. The patient had the dentures made by a general dentist. According to the patient, the dentures currently seem loose and frequently fall out when speaking and chewing. When she first used her dentures, she typically removed them at night. However, after that, she hardly ever did so while asleep, just one or two times per month, or perhaps never at all. The patient simply took out her dentures twice a day to clean them with a toothbrush and toothpaste while taking a shower. The patient reported having systemic diseases, including diabetes, hypertension, hypercholesterolemia, and gout. The patient frequently takes metformin. She took antihypertensive medication only when her blood pressure increased. Intraoral examination revealed diffuse erythematous, measuring >2 cm, red in color, number 2 (bilateral), irregular edges, located on the hard palate (Figures 1a). Atrophic lesions, flat, measuring ±3x5cm, red in color, multiple, with diffuse borders and irregular edges, located on the dorsum surface of the tongue (Figure 1b). Blood test results showed an increase in blood glucose levels and HbA1c, and a decrease in Hemoglobin, Hematocrit, MCV, and MCH (Table 1). Based on clinical appearance and laboratory tests, the patient was diagnosed with denture stomatitis type II (Newton's classification), associated with diabetes mellitus and mild anemia. The treatment included nystatin oral suspension (1 cc, four times daily), chlorhexidine gluconate 0.2% mouth rinse (10 ml, twice daily), blood sugar control, improved nutrition, and follow-up.

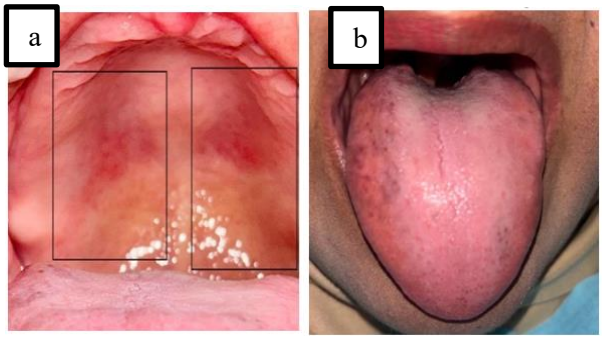

Figure 1. (a) Diffuse erythematous, measuring >2 cm on the hard palate and (b) atrophic glossitis

The first follow-up visit, ten days after initiating the medication, revealed that the erythema on the palate persisted but had decreased in intensity. She reported infrequent use of the nystatin drops but stated that she consistently soaked her dentures every night. Intraoral examination showed diffuse erythematous lesions, measuring less than 2 cm in diameter, red in color, bilateral, with irregular borders, located on the hard palate (Figure 2a). The second follow-up visit reported that the erythema on the palate was no longer present. Intraoral examination showed the lesion had healed completely (Figure 2b).

Table 1. Laboratories examination

Variable	Result	Normal Range
Hemoglobin (g/dL)	11.8*	12.0-14.0
Hematocrit (%)	35.2*	40.0-54.0
Erythrocyte (/µL)	4.51	4.00-6.10
Mean Corpuscular Volume (fl)	78.0*	80.0-96.0
Mean Corpuscular Hemoglobin (pg)	26.1*	27.0-31.0
Mean Corpuscular Hemoglobin Concentration (g/dL)	33.5	30.0-34.0
Platelets (10^3/µL)	219	150-410
Leucocyte (10^3/µL)	10.7*	4.00-10.00
Eosinophil (%)	1	1-3
Lymphocyte (%)	27	20-40
Fasting Glucose (mg/dL)	255*	75-115
HbA1c (%)	12*	4-6

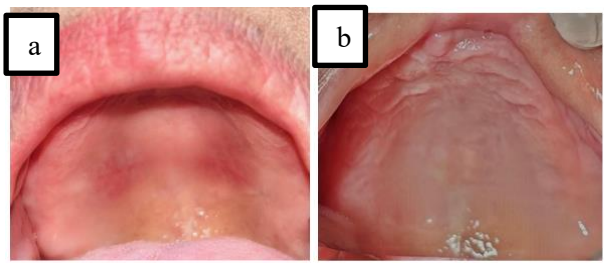

Figure 2. (a) Diffuse erythematous, measuring <2 cm, on the hard palate; (b)The lesion had healed completely

DISCUSSION

In this case, A 54-year-old female presented with a chief complaint of redness of the palate. Blood test results showed elevated blood glucose levels and HbA1c levels, along with decreased Hemoglobin, Hematocrit, MCV, and MCH. Based on clinical appearance and laboratory findings, the patient was diagnosed denture stomatitis associated diabetes mellitus and accompanied by mild anemia.

Denture stomatitis is primarily caused by an infection with *Candida albicans*.[2] The organism is found naturally in the mouth. However, under some circumstances, it could become pathogenic and result in the disease. Malignancies, immunological and endocrine disorders, diabetes mellitus, HIV, immunosuppression, xerostomia, poor oral hygiene, tissue damage from insufficient occlusion, and long-term prosthesis use are a few of these.[8,9] Diabetes mellitus (DM) is a collection of metabolic diseases marked by persistently high blood sugar levels brought on by deficiencies in either the action or secretion of insulin, or both.[10,11] Individuals with immunocompromised conditions or systemic disorders such as diabetes mellitus are far more likely to develop denture stomatitis.[12]

A prevalent and expanding worldwide health issue, diabetes mellitus leads to several problems. Diabetes increases the risk of developing dental conditions such as candidiasis, denture stomatitis, and angular cheilitis, which are linked to inadequate glycemic management and the need for therapeutic dentures.[13] In diabetics, the oral mucosa creates a less hostile environment for Candida species to colonize the mouth. This fact might be connected to things like hyposalivation, denture use, the level of glycemic control, and medication use. High salivary glucose levels and the persistence of aciduric yeasts in the oral cavity are made possible by a sugar-rich oral environment in diabetics with impaired metabolic regulation.[14] Patients with diabetes mellitus are more vulnerable to infections because of vascular changes and neuropathies that result in a lack of polymorphonuclear leukocytes. Decreased salivary flow, insufficient salivary buffering capacity, and poor cleaning of the entire dentures have all been linked to a higher risk of infections.[15]

Anemia is characterized by a decrease in the blood's ability to carry oxygen, which can be caused by an anomaly in the Hb content of red blood cells or a decrease in the number of circulating Red Blood Cells.[7] Changes in the oral cavity's tissue structure might result from nutritional deficits. Nutrition influences the health of the oral cavity, and on the other hand, alterations in the tongue papilla are frequently the first clinical indications of nutritional deficits.[6] In this case, the patient had mild anemia. The patient complained that her dentures often came loose when speaking or chewing. This could also interfere with nutritional intake, so it was recommended that new dentures be made.

Applying the appropriate topical or systemic antifungal drugs is necessary to eradicate predisposing variables to treat oral candida. The patients were instructed to control their blood sugar levels and to regularly clean and dry their dentures to preserve the health of the oral mucosa.[16] As a result, managing and preventing oral problems through diabetes control becomes crucial, and knowing how common oral lesions are in diabetic patients aids in the development of preventative measures.[17]

CONCLUSIONS

Denture stomatitis is a complex disorder that primarily affects the palatal mucosa of the maxilla. Management of this condition must be comprehensive, beginning with a proper diagnosis of the causative and risk factors, then directing treatment to the most significant factors specific to the patient. In addition, managing the impact of oral infections on general health and enhance quality of life, interdisciplinary collaboration, and public education regarding the interrelationship between oral and systemic health.

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