

# Angular Cheilitis in Elderly Patient with Diabetes Mellitus and Decrease of Vertical Dimensions

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## ABSTRACT

Our patient is a 61-year-old, male, heavy smoker, and diagnosed with diabetes mellitus (DM) who sought medical intervention due to complaints of painful lesions on the left and right corners of the mouth. The patient lost a lot of teeth, only two remained intact and has never used dentures. We present a case of angular cheilitis in an elderly patient with DM and a decrease of vertical dimensions. Clinical management includes anamnesis, clinical examination, treatment and elimination of predisposing factors through integrated multidisciplinary treatment.

*Key Words: angular cheilitis, diabetes mellitus, vertical dimensions*

## INTRODUCTION

Oral health is an integral part of general health and a significant determining factor for an individual's quality of life.<sup>1,2</sup> Oral health reflects overall well being for the elderly<sup>3</sup> which is defined in the Indonesian minister of health regulation number 79 of 2014, as someone who has reached the age of sixty and above.<sup>4</sup> There are substantial changes in immunity as age increases and these changes will contribute to occurrence of infections and inflammation diseases.<sup>5</sup>

Angular cheilitis presents as an inflammation at the corner of the mouth that affects between 0.7% and 3.8% of the general population, occurring most frequently in children (ages 0-18), and then again in adults (ages 30 to 60). There is a three-fold incidence in patients using dentures.<sup>6</sup> Our patient who has lost most of his teeth due to old age has never used dentures yet acquired a rare case of angular cheilitis with other local and systemic conditions such as diabetes mellitus (DM) and decrease of vertical dimensions.

Maintaining the oral health of elderly patients is vital due to its correlation to nutrition and their relationship to systemic infection.<sup>3</sup> Elderly patients with underlying systemic and local factors need interdisciplinary management because there is no complete and comprehensive cure if only local or systemic factors are managed.

We present a rare case of angular cheilitis in elderly patient with no history of dental dentures, diagnosed with DM and has a decrease of vertical dimensions accompanied by other underlying predisposing factors.

## CASE REPORT

A 61-year-old male, Javanese and married, came to the Dental and Oral Hospital of Universitas Airlangga as an outpatient, with chief complaints of pain in the corners of the

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**Figure 1.** Erythematous fissure in the right and left corner of the mouth at the first visit.

**Figure 2.** Condition of the patient's teeth.



**Figure 3.** During the second visit, shows erythematous erosion in both corners of the mouth.

left and right mouth and sometimes bleeding spontaneously three days prior to the consultation. There are no prodromal symptoms before the lesion came and no allergy history from patient. The patient had never been to a doctor to treat the complaint. The patient is diagnosed to have DM three years ago and usually takes glibenclamide twice a day along with metformin HCl 500 mg twice a day. The last time the patient went to a general practitioner was for fasting blood glucose (FBS) test five months ago and the reading was 279 mg/dL FBS level. Patient has lost most of his teeth and only two remain intact however has no history of using dentures. Patient has also been smoking for decades and usually consumes three packs a day. Extraoral examination on the right and left corner of the mouth found fissure lesions with irregular edges of erythema, clearly defined and painful (Figure 1). Intraoral examinations found pseudomembran on dorsal of tongue with diffuse borders, irregular edges, yellowish-white surface that can be scraped and painless. Area of edentulous includes maxilla and for mandible only 31, 41 and gangrene radix of 33 and 43 left. (Figure 2). With these conditions, the patient had a decrease in vertical dimension because there's no space for occlusion between the upper and lower teeth.

Working diagnosis for this case was angular cheilitis. Herpetic lesion, syphilitic papula, local trauma, and malignancy as differential diagnosis. Examination of sialometry, complete blood count, random blood sugar, and fasting blood sugar tests were also done. Sialometry examination result was 0 ml/min of saliva. Treatment management done on our patient includes asepsis with 10% of povidone-iodine and chlorine dioxide dental gel as topical anti-inflammatory drugs and was prescribed chlorine dioxide dental gel to be applied four times a day. Discharge instructions such as to use the gel regularly, maintain oral hygiene, increase consumption of fruits, vegetables, water and stop smoking habits were also given.

Patient came back for a second visit four days after the first visit and reports 0/10 pain although the prescribed medications were not taken as ordered. From the extraoral examination, lesion on the right and left lip corner of the mouth has erosion with clear borders, irregular edges, redness, and painless (Figure 3). Laboratory results showed erythrocyte sedimentation rate is 43 - 78 mm/hour (high) ( $n < 15$  mm/hour), lymphocytes is 53% (high) ( $n = 25\% - 33\%$ ), fasting blood glucose level is 154 mg/dl (high) ( $n = 70 - 115$  mg/dl) and random blood glucose level is 238



**Figure 4.** Hypopigmented macules during the third visit.

mg/dl (high) ( $n < 200$ mg/dl). During the third visit, lesions on both corners of the mouth have healed and patient reports no pain and discomfort although the patient did not comply with the prescribed topical medication. On clinical examination, the lesions are now hypopigmented macules with diffuse borders, irregular edges, and painless. (Figure 4). Eventually, the final diagnosis of this case is angular cheilitis. The lesions on the left and right corners of the mouth ruled out the herpetic lesion nor syphilitic papula, and local trauma which lesions are commonly unilateral. Healing of the lesion after treatment also ruled out the possibility of malignancy. At the end of visit, patient was referred to internist for the DM condition, referred to oral and maxillofacial surgery clinic to remove gangrene radix, and referred to periodontology clinic for scaling and root planing of remaining teeth as well as to the prosthodontics clinic for dentures.

## DISCUSSION

A patient's age is a major factor to be considered especially in a case like angular cheilitis with DM. As age increases, substantial changes in immunity will occur. These changes will greatly contribute to the occurrence of infectious and inflammatory diseases.<sup>5</sup> Angular cheilitis is characterized by painful fissure, inflammation on one or both corners of the mouth, and typically presents as erythema, scaling, fissuring, and ulceration.<sup>7,8</sup> If all the teeth in the maxilla are lost, vertical dimensions will decrease because of the absence of occlusion between upper and lower teeth. The combination of bone resorption, muscle atrophy, and tooth loss will cause a reduction in the distance between the nose and chin. This condition causes the skin around the mouth area to fold and wrinkle. The presence of folds and wrinkles will accommodate saliva in which the presence of *C. albicans* and other contaminants causes a bacterial or viral infection.<sup>7,8,9</sup>

Poor oral hygiene, old age, and smoking habits are the main contributing factors to our patient's loss of teeth

and only two teeth remain intact with some gangrene radix left. Further examination reveals gingivitis with the presence of calculus. Periodontal disease is one of the etiology factors that greatly contribute to tooth loss in the elderly.<sup>10</sup> Epidemiological studies have linked DM and periodontal disease mostly due to a decrease in glycemic control in patients with DM.<sup>11,12</sup> Several studies also show the significant effect of smoking habits and age factors in tooth loss, where an aging smoker will have a higher chance of losing teeth compared to non-smokers.<sup>10,13</sup> Loss of a lot of teeth finally decrease patient's vertical dimension and resulting in accumulation of the saliva on the corner of mouth. Sialometry procedure results showed patient has xerostomia or dry mouth, a condition that affects almost 50% of the elderly in which salivation decreases with age.<sup>14</sup> Moreover, xerostomia contributes around 5% as a risk factor for angular cheilitis. Hyposalivation condition decreases oral clearance, salivary pH, and buffer capacity.<sup>15</sup>

Other laboratory tests such as complete peripheral blood count test, mean corpuscular hemoglobin, (MCH) and mean corpuscular hemoglobin concentration (MCHC) of the patient are normal but tend to be on the lower side. This result is probably caused by the patient's daily food patterns in which the patient rarely consumes fruits and vegetables. Lack of regular intake of vegetables and fruits reduces patient's absorption of vitamins and minerals such as iron, folic acid, and vitamin B12.<sup>16,17</sup> Less substances of folic acid and vitamin B12 are also some of the predisposing factors of angular cheilitis.<sup>16,6</sup>

Management of the patient's condition includes local therapy with chlorine dioxide dental gel (oxyfresh®). Chlorine dioxide is a powerful oxidizing and germicidal agent with the ability to eliminate a wide range of bacteria, viruses and fungi.<sup>18</sup> Chlorine dioxide gel showed a positive response in the healing process of the mouth lesions. In addition, angular cheilitis can be secondary to candida infection. A culture swab on the corners of the mouth should be done if there is a poor response to the therapy. The culture swab was not done in our patient's case because 1) Patient's lesions



were responsive with the chlorine dioxide dental gel and 2) other studies mention that angular cheilitis with candida infection is more common in elderly with dentures.<sup>19</sup> The patient was then referred to an internist for management of DM. Patient was also referred to periodontist and oral maxillofacial surgery clinic for oral hygiene care.

## CONCLUSION

Angular cheilitis in elderly patient with DM and decrease of vertical dimension can be treated by local therapy. But elderly patient with multiple underlying systemic and local factors need interdisciplinary management because the symptoms will only reoccur if local factors or systemic factors are not managed.

## Declaration of Patient Consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the journal. The patient understands that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

## Statement of Authorship

All authors participated in data collection and analysis, and approved the final version submitted.

## Author Disclosure

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