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Case Report *Volume 6 Issue 2*

Angular Cheilitis as Manifestation of the Patient with Hemolytic Anemia

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Abstract

Hemolytic anaemia management differs from iron deficiency anaemia, the most common cause of angular cheilitis. Mistakes in the therapy of anaemia can have serious consequences for the patient. Dentists need to be aware of the intra-oral symptoms of hemolytic anaemia to treat the patient appropriately. A 24-year-old woman came to Dental Hospital Jember University because of pain in the corner of her mouth. She has been experiencing these symptoms recurrently since last year. She appeared lethargic and pale, and. Upon examination, several fissures were noted in the corners of her mouth. A complete blood test confirmed a diagnosis of anaemia. Given the high red blood cell distribution width (RDW), we proceeded with a blood smear examination. The microscopic examination resulted in pale, irregularly shaped, and fragmented erythrocytes. We suspected that the patient had hemolytic anaemia. In addition to treating the antifungal infection with miconazole cream in the corners of her mouth, we referred her to a haematologist for further evaluation and management.

Keywords: Hemolytic Anaemia; Angular Cheilitis; RDW

Abbreviations

AC: Angular cheilitis; RDW: Red Blood Cell Distribution Width; MCV: Mean Corpuscular Volume, WHO: World Health Organization; HB: Haemoglobin.

Introduction

Angular cheilitis (AC) can be called angular cheilosis, angular stomatitis, commissural stomatitis, rhagades, or perleche, is an inflammatory lesion found in the corner of the mouth that begins at the mucocutaneous junction and extends to the skin [1]. The cause of AC is multifactorial and could range from local etiologies to systemic ones. The local etiologies implicated in the development of AC can be classified under anatomical, mechanical, allergic, chemical, and infectious categories. These local factors can either act alone or combine in developing the lesion. The systemic causes include nutritional deficiencies, systemic diseases, and drug-related side effects [2]. Nutritional deficiencies account for 25% of all cases of angular cheilitis and include iron deficiency and deficiencies of the B vitamins riboflavin (B2), niacin (B3), pyridoxine (B6), and cyanocobalamin (B12) [3].

Anaemia causes impaired oxygen transport to tissues, thus disrupting cell function and proliferation. Since epithelial

cells undergo rapid turnover, especially in the corners of the mouth, they will be affected quite early due to decreased proliferation, resulting in atrophic epithelium. This atrophic corner epithelium can easily be injured and becomes conducive to the development of angular cgeilitis through overgrowth and colonization of normal oral flora such as Candida, Staphylococcus, and Streptococcus [3].

Anaemia, often found closely related to angular cheilitis, is due to iron deficiency causing microcytic hypochromic anaemia and anaemia due to vitamin B12 and folate deficiency causing macrocytic hypochromic anaemia. This article will report angular cheilitis as a symptom of hemolytic anaemia, emphasizing that its treatment differs from that of iron deficiency anaemia. Administering iron to patients with hemolytic anaemia can be harmful.

Case Report

A 24-year-old woman came to Dental and Oral Hospital Jember University complaining of pain in the corner of the mouth, especially when opening or eating. This complaint has been recurring since 1 year ago. The patient also complained of dry lips, especially when waking up. The patient did not seek treatment because the symptoms usually resolve independently. The patient has a good dietary habit but admitted to having many psychological issues. The patient did not use dentures or orthodontic appliances. The examination showed that the lips looked dry, and the palate and the base of the mouth looked pale. The clinical condition of the lips and left commissure can be seen in Figure 1. From the clinical examination day, we suspect the patient has anaemia, and we have referred her for a complete blood test. The result of the complete blood count is presented in Table 1.

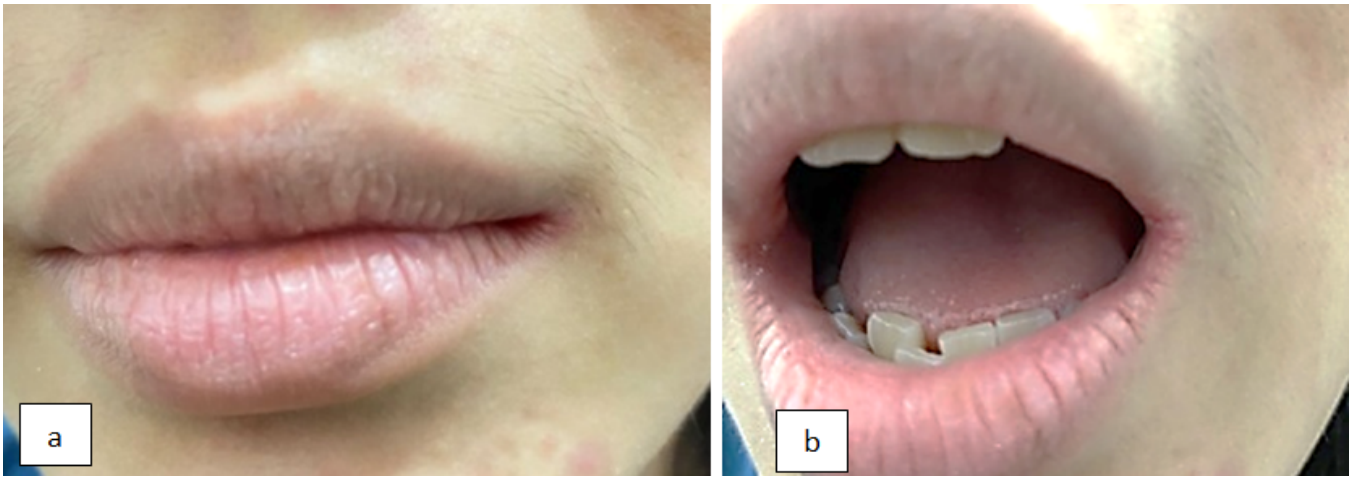

Figure 1(a): The lips of the patient are pale and desquamative, **(b)** multiple fissured in the left corner of the commissure.

Blood component	Result	Reference Range	Unit
Erythrocyte count	4,19	3,80 – 5,20	10^6/µL
Hemoglobin level	8,5*	11,5 – 16,5	g/dL
Hematocrit	29*	35 – 49	%
Leukocyte count	8360	3600 – 10.600	/µL
Platelets	444	150 - 450	/µL
Mean corpuscular volume (MCV)	69*	80 – 100	fL
Mean corpuscular haemoglobin (MCH)	20*	26 – 34	pg/cell
Mean corpuscular haemoglobin concentration (MCHC)	30*	32 – 36	g/dL
Red Blood Cell Distribution Width (RDW)	17,4*	11,5 – 14,5	%

Table 1: Complete blood count result.

The levels of haemoglobin, hematocrit, MCV, MCH and MCHC, which were lower than the normal range, indicate microcytic hypochromic anaemia. The most common cause of this condition is iron deficiency [4]. The Red Blood Cell

Distribution Width (RDW) was higher than the normal range. The next step is to perform a microscopic examination of the blood smear to see the morphology of the blood smear.

The microscopic image of the blood smear from the patient is shown in Figure 2(a), and from a healthy person as compared is shown in Figure 2(b).

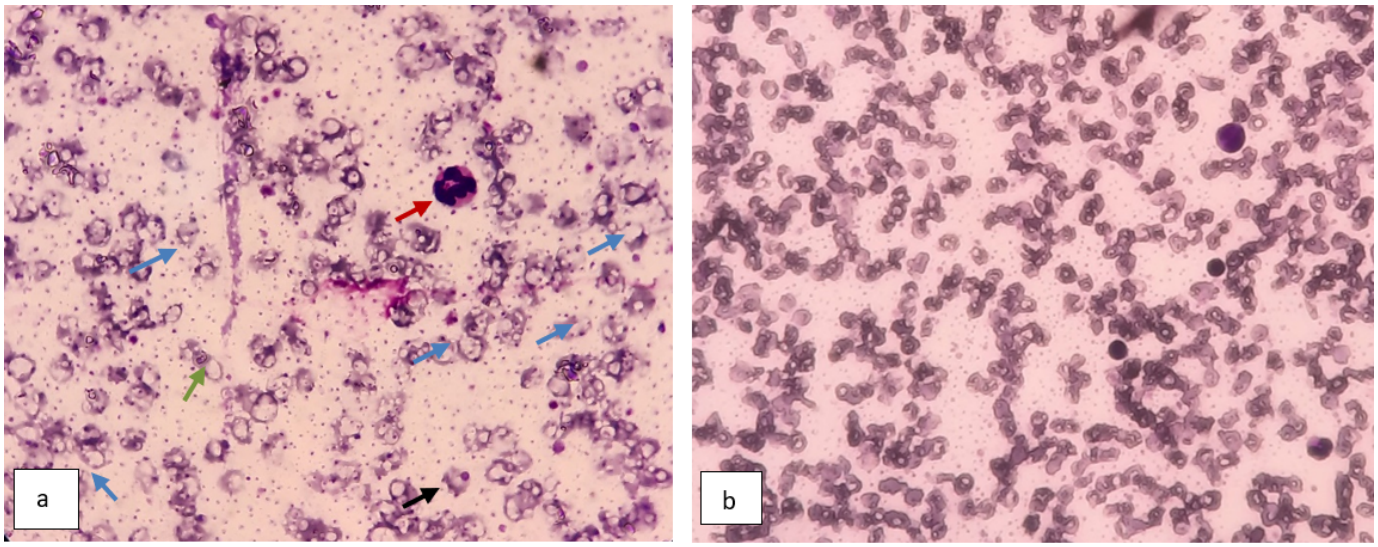

Figure 2: (a) Microscopic view of the patient's blood smear, the red blood cells appear anisocytosis, hypochromic, many fragmented cells (blue arrow), small dots in m1embrane cells similar to the Heinz-body (green arrow), and one bite cell (black arrow). The hypersegmented neutrophils are also seen (red arrow). (b) Microscopic view of a healthy individual, erythrocytes appear with uniform size and shape (Wright staining, 400 x).

In the blood smear depicted in Figure 2a, we observed erythrocytes exhibiting various shapes and sizes, with larger pale areas compared to Figure 2b, a blood smear from a healthy individual stained and examined using the same technique. In Figure 2a, some erythrocytes have damaged membranes, resulting in an incomplete appearance. Almost all erythrocytes have small dots on the membranes similar to Heinz-bodys. We identified hypersegmented neutrophils, typically associated with megaloblastic anaemia, but the overall erythrocyte morphology does not support the diagnosis. Given the blood laboratory test findings and the erythrocyte shape in the blood smear, we referred the patient to a haematologist for further evaluation and treatment.

We prescribed a lip balm containing 0.1% hydrocortisone and vitamin E 100 IU to be applied to the lips three times a day for the lip lesions and a 2% miconazole cream for the lesion in the corner of the mouth. We also prescribed multivitamins containing vitamin B complex, vitamin C, and zinc for supportive therapy.

Discussion

The relationship between angular cheilitis and anaemia has long been known. As explained in the introduction, the corners of the mouth are very sensitive areas when there is a disruption in cell regeneration. A decrease in Hb levels, one sign of anaemia, can disrupt cell regeneration. Anaemia often causes angular cheilitis, caused by iron deficiency anaemia, vitamin B12, and folate. A study showed that only 35.3% of patients with angular cheilitis suffered from iron deficiency anaemia [5]. On the other hand, hemolytic anaemia is rarely reported as a cause of angular cheilitis.

The patient's complete blood count showed that the haemoglobin (Hb) level was below normal. Anaemia is a decrease in haemoglobin levels compared to an individual's baseline. The baseline levels used for diagnosis are age-specific, sex-specific, and race-specific. The World Health Organization (WHO) defines anaemia as a haemoglobin level below 13 g/dL in men and below 12 g/dL in women. Identifying early, treatable causes of anaemia is crucial, as haemoglobin allows red blood cells (RBCs) to carry oxygen throughout the body. If there is insufficient oxygen supply, individuals may experience symptoms like weakness, dizziness, headaches, shortness of breath, or arrhythmias [6,7].

The RBC indices, especially mean corpuscular RBC volume (MCV), have been used primarily in evaluating anaemias. The MCV (Mean Corpuscular Volume) erythrocyte index examination result in patients is below the normal limit,

which means that microcytic anaemia occurs. The MCH (Mean Corpuscular Hemoglobin) and MCHC (Mean Corpuscular Hemoglobin Concentration) values are also below the normal limit, indicating that the patient has hypochromic anaemia. MCV, MCH, and MCHC are indicators of blood test results first introduced by Wintrobe in 1929. These three indicators are very important in determining the aetiology of anaemia suffered by patients [8].

Red blood cell distribution width (RDW) is a measure of the change in the size of red blood cells, and it is used in combination with other haematological parameters for the differential diagnosis of anaemias. [9] In iron deficiency anaemia, the RDW increases (anisocytosis) at the onset of the disease. Anisocytosis precedes microcytosis and hypochromic [10]. The average lifespan of red blood cells is approximately 100 days. If iron deficiency anaemia develops less than 90 days before testing, the blood sample will contain a mix of normal-sized and smaller-sized red blood cells, and this size variation results in an elevated RDW. If the anaemia has persisted for over a year, the size of the red blood cells will likely become uniformly smaller, leading the RDW to fall within a normal range. In this case, the patient experienced symptoms of anaemia and angular cheilitis that had recurred for the past year, indicating that anaemia had been present for more than 1 year, but the RDW examination results showed a higher level than normal. Led by the intriguing differences observed, the author conducted a blood smear on patients and healthy individuals for comparison. The association between RDW and non-hematological diseases has recently attracted much attention. Accumulated evidence has revealed that RDW is elevated in various autoimmune diseases and associated with disease activity or complications [11].

Hypersegmented neutrophils are an important diagnostic feature of megaloblastic anaemias; the erythrocytes are macrocytic [10,12]. In this case, the hypersegmented neutrophils occur in microcytic anaemia. The dots on the cell membrane that resemble the appearance of Heinz bodies are also seen in the blood smears of patients. Heinz bodies are indicative of oxidative injury to the erythrocyte. They are inclusions of irreversibly denatured haemoglobin attached to the erythrocyte cell membrane. Heinz bodies decrease the erythrocyte's elasticity and deformability, increasing the probability of splenic destruction. Splenic macrophages remove the damaged portions of the erythrocyte membrane, resulting in the formation of bite cells. Bite cells and the resulting spherocytes are at increased risk of extravascular hemolysis, which may lead to oxidant-induced hemolytic anaemia [13]. The fragmented cells (schistocytes) found in the blood smear suggest mechanical destruction of red cells within the vasculature. Schistocytes are seen as uniform in size or shape and often have a small and jagged appearance [14]. Heinz bodies and schistocytes are seen in hemolytic anaemia due to deficiency of the enzyme glucose-6-phosphate dehydrogenase deficient [15]. Various sizes and shapes of cells, some membrane defects, dots on the cell membrane and the presence of "bite" and "blister" cells strongly point to a diagnosis of hemolytic anaemia, leading us to refer the patient to haematology [16].

Iron administration in hypochromic microcytic anaemia due to iron deficiency is dangerous for patients with hemolytic anaemia because, in hemolytic anaemia, there is already a buildup of iron in the body due to continuous hemolysis. Excessive iron levels is a risk factor for organ dysfunction and damage resulting in various organ diseases such as liver, heart, and kidney, diabetes mellitus, and neurodegenerative diseases [17].

Conclusion

Careful observation is essential for providing effective therapy to patients with angular cheilitis. While the most common cause of this condition is iron deficiency anaemia, it is important for dentists not to overlook other potential causes of anaemia. By conducting thorough patient interviews and laboratory tests, we can prevent errors in treatment that could harm patients.

- **Ethics Approval and Informed Consent:** Written and verbal consent has been obtained from the patients presented in this paper, including for publication.
- **Conflicts of interest:** There are no conflicts of interest
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