



## Angular Cheilitis and Iron Deficiency Anemia

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### Abstract

Angular cheilitis presents as an area of inflamed and cracked skin at the angles of the mouth. Iron deficiency anemia seems to predispose to angular cheilitis. Thus this study was conducted to find out how many patients with angular cheilitis were having iron deficiency anemia.

Eighty-two patients (45 females and 37 males) between the age of (9-70) years with angular cheilitis were used in this study. Complete blood picture with hemoglobin estimation and blood films were done for each patient.

The highest number of patients with angular cheilitis was in the two age groups (5-14) and (55-64) years. Twenty-nine (35.3%) of patients with angular cheilitis were of iron deficiency anemia. Their hemoglobin values (Hb) were  $9.3 \pm 0.7$  gm\dl in females and  $10.6 \pm 0.6$  gm\dl in males while for those not anemic patients is  $11.8 \pm 1.1$  gm\dl in females and  $14.5 \pm 0.6$  gm\dl in males. The Hb values were significantly decreased in those patients with microcytic hypochromic red blood cells ( $p < 0.01$ ) of females and ( $p < 0.05$ ) of males.

The highest number of patients with iron deficiency anemia was in the age group (25-34) years, while in the age group of (65-74) years, patients with angular cheilitis were not affected with iron deficiency anemia.

Only twenty-nine (35.3%) of patients with angular cheilitis were having iron deficiency anemia (microcytic hypochromic anemia). The mean of hemoglobin values (Hb) were  $9.3 \pm 0.7$  gm\dl for females and  $10.6 \pm 0.6$  gm\dl for males.

**Key words: Angular cheilitis, iron deficiency anemia, hemoglobin.**

### Introduction

Angular cheilitis (perleche; angular stomatitis) is the clinical diagnosis of majority of lesions affecting the angles of the mouth. The lesions are infectious in origin but several predisposing factors may interact. <sup>(1, 2)</sup> Both the skin and the mucosa of the commissure may be affected; clinically the lesion is characterized by maceration, erythema, and crust formation. The commissure appears wrinkled and with time deep fissures

may develop with a tendency to bleeding. <sup>(3)</sup>

### Etiology

Angular cheilitis apparently has a varied etiology. There is good reason to believe that the direct etiological factor is infection by yeasts, staphylococci, or streptococci as found by Macfarlane and Helnarska, (1976). <sup>(4)</sup> Candida organism can live on the skin and mucous membrane of up to

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75% of the population. Angular cheilitis is an important type of oral candidiasis<sup>(5)</sup>. It seems however, that the infection is secondary to a local or systemic predisposing factor. Thus topical chemotherapy of the lesions will not produce a permanent cure if the predisposing conditions are not removed.<sup>(6,7)</sup>

### **Predisposing conditions**

1. Vertical dimension of occlusion and lip support.

Epidemiological studies have shown an association between a decreased vertical dimension of occlusion and angular cheilitis

2. Denture stomatitis.

Several studies have shown that angular cheilitis occurs more frequently in patients with denture stomatitis. The infection may start beneath the maxillary denture and from that area spread to the angles of the mouth.<sup>(10,11)</sup>

3. Carbohydrate consumption.

Direct association between angular cheilitis and large intake of carbohydrates has been shown, and it was assumed that a high salivary concentration of glucose predispose to infection, in the angles of the mouth.<sup>(12)</sup>

4. Avitaminosis.

Avitaminosis may suppress host resistance; lesions will usually be bilateral and often associated with glossitis. Deficiencies of B-vitamins seem to be particularly important predisposing conditions. Thus a decreased plasma concentration of thiamin and riboflavin was demonstrated in-patients with angular cheilitis.<sup>(13,14)</sup>

5. Anemia.

Iron-deficiency anemia (microcytic hypochromic anemia) is the most common of all anemia's. The causes are: - chronic blood loss, such as in

menses, menopausal bleeding, parturition, bleeding hemorrhoids, or a bleeding malignant lesion or ulcer in the gastrointestinal tract. It also may develop in patients from a variety of causes that may decrease the rate of absorption of iron, such as subtotal or complete gastrectomy, or in the malabsorption syndromes. An inadequate dietary intake of iron also may be responsible.<sup>(2)</sup>

### **Materials and methods**

Eighty-two patients (45 females and 37 males) between the age of 9-70 years with angular cheilitis were referred to oral medicine clinic, College of Dentistry, University of Baghdad. The study of the samples was between November 1999 and April 2000. Medical history was taken from each patient for the presence of any systemic disease.

Intra and extra oral examination was done for each patient, using dental light, mirror, probe and tweezers, some of the patients were denture wearers, and others were not.

Complete blood count with hemoglobin estimation was needed for each patient. Red blood cell study (blood film) was needed to detect the microcytic hypochromic anemia (iron deficiency anemia).

### **Results**

Eighty-two patients (45 females and 37 males) between the age of (9-70) years with a mean age of 37.7 years. Each was with angular cheilitis. Nineteen patients were denture wearer (23.1%), others were not. The results revealed that females were of iron deficiency anemia more than males in all age groups except in the age groups of (45-54) and (55-64) years in which males affected more than females. The

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highest number of patients with angular cheilitis was in two age groups (5-14) and (55-64) years (as in table 1 and figure 1).

Regarding the results of the blood analysis, 29 patients (35.3%) with angular cheilitis were with iron deficiency anemia, they were 20 females (68.8%), and four of them were pregnant women while the number of the males was 9 (31%).

The mean of hemoglobin (Hb) values were  $9.3 \pm 0.7$  gm\dl in females and  $10.6 \pm 0.6$  gm\dl in males, while for those not anemic patients were  $11.8 \pm 1.1$  gm\dl in females and  $14.5 \pm 0.6$  gm\dl in males. Blood films show microcytic hypochromic red blood cells which is an indication of iron deficiency anemia. Statistically those patients with microcytic hypochromic red blood cells show a significant decrease in Hb values  $p < 0.001$  in females and also in males  $p < 0.05$  (using T-test) than those with normocytic normochromic red blood cells.

The highest number of patients with iron deficiency anemia was in the age group of (25-34) years as in table 2 and figure 2.

In all age groups females were more affected with iron deficiency anemia than males except in the age group (55-64) in which the number of females with iron deficiency anemia equal to the number of male. In the age group (65-74) years, no of the patients with angular cheilitis were affected with iron deficiency anemia.

## Discussion

In this study the results revealed that the age range of patients with angular cheilitis was of (9-70) years which is a wide range because in each group of age there is a possibility to be affected with angular cheilitis if the

causative and the predisposing factors were present. Nineteen patients (23.1%) were denture wearers; the reason for the presence of angular cheilitis in those patients is that dentures may have both direct and indirect etiological significance. Directly, over closure, decrease in vertical dimension, poor lip-support and denture stomatitis will predispose for an infection of the angles of the mouth. Indirectly, poor functioning dentures may direct the patient's choice of food to deficient diet, which may result in a state of nutritional deficiency.<sup>(17)</sup>

Females were affected with angular cheilitis more than males, which is in agreement with the results of other investigators, Rose 1968; Turrell 1968; Axell 1976; Axell 1990.

The results revealed that 35.3% of patients with angular cheilitis were of iron deficiency anemia which is similar to the results of other investigators who found a significantly decreased concentration of plasma iron in a group of patients with angular cheilitis.<sup>(2, 15, 16)</sup>

Iron deficiency anemia seems to predispose to angular cheilitis, thus a significantly decreased concentration, of serum iron was demonstrated in a group of patients with angular cheilitis and the lesions healed when the diet was supplemented with iron.<sup>(15, 16)</sup>

Also females were more affected with iron deficiency anemia than males. This may result from blood loss such as in menstrual or menopausal bleeding, and parturition. In this study iron deficiency anemia was increased in females in the age group (25-34) years and in this group four patients were pregnant women complained of angular cheilitis and were iron deficiency anemia patients.

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Table 1: Age and sex relation ship in patients with angular cheilitis.

Age/Years	5-14	15-24	25-34	35-44	45-54	55-64	65-74
Sex							
Males	6	3	5	4	9	8	2
Females	9	6	7	6	4	7	6

Table 2: Age and sex relation ship in patients with iron deficiency anemia.

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Age/Years	5-14	15-24	25-34	35-44	45-54	55-64	65-74
Sex							
Males	1	1	3	1	2	1	
Females	3	4	6	3	3	1	

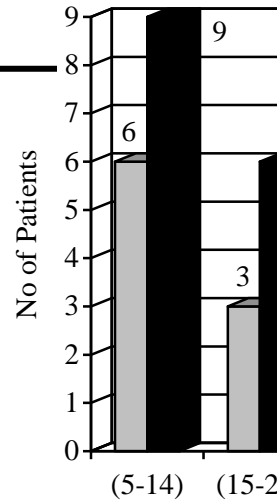


Figure 1: Age and sex relation ship in patients with angular cheilitis.

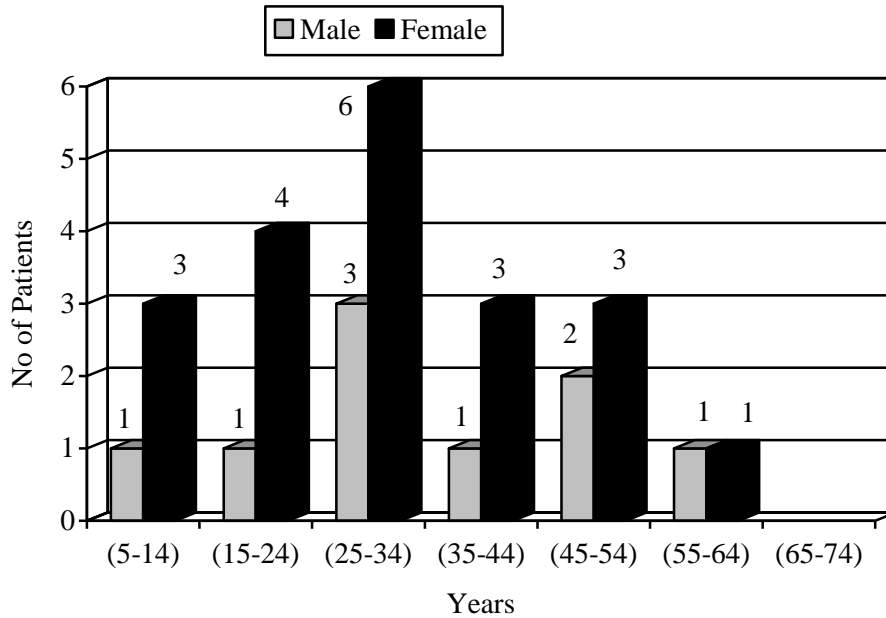


Figure 2: Age and sex relation ship in patients with iron deficiency anemia.