

# Relationship between Anemia and Sore mouth

## Original Article

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**Received:** Sep 4, 2011

**Accepted:** Jan 18, 2012

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## Abstract

**Introduction:** According to the prevalence of sore mouth, its outcome and possible role of anemia in its etiology and some contradictions in this theory, our study was performed to evaluate the role of iron deficiency anemia as a etiological factor for sore mouth.

**Materials and Methods:** This historical cohort study was performed on 40 cases, including 20 anemic patients as the experimental group and 20 healthy individuals as the control group with similarity in socio economical, sex and age factors. Oral examination was carried out in two groups to evaluate soremouth presentations including atrophic glossitis, recurrent oral ulceration, pale oral mucosa, tongue burning sensation, glossodynia and angular cheilitis. Data was analyzed by chi-square test. Attributable risk (AR) and related risk (RR) were calculated.

**Results:** Out of 40 studied cases, sore mouth manifestations were found in (45%) of individuals in case and (5%) control groups ( $p < 0.005$ ). Regarding the anemic patients, RR and AR of sore mouth were 9 and 40% respectively. The most prevalent manifestations of sore mouth were atrophic glossitis, recurrent oral ulceration, pale oral mucosa, tongue burning sensation, glossodynia and angular cheilitis.

**Conclusion:** According to this study, it seems iron deficiency anemia has a significant role in sore mouth incidence. Evaluation of anemia treatment effect on sore mouth elimination is recommended.

**Key words:** •Anemia •Oral ulcer •Cheilitis •Mucositis

**Introduction**

Sore mouth is a group of oral lesions including atrophic glossitis, prickly sensation of tongue, pale mucosa, recurrent aphthous ulcer, angular cheilitis, erythematous mucositis and glossodynia.<sup>(1)</sup>

Blood deficiency and malnutrition are the two major proposed etiological factors for sore mouth.<sup>(2)</sup>

In the recent years, iron deficiency anemia has been prevalent in our country, World Health Organization(WHO) reported that 58 percent of woman in undeveloped countries are suffering from anemia.<sup>(3,4)</sup> Anemia with blood hemoglobin decrease leading to reduced tissue oxygenation can result in undesirable effects.<sup>(5)</sup>

It has been argued that the treatment with ferrous supplement in iron deficiency anemia of the patients with atrophic glossitis symptoms, can reduce the oral lesions.<sup>(6,7)</sup>

Dali-Youcef et al found out that the patients with megaloblastic anemia are more susceptible to ostematitis and atrophic glossitis than the healthy ones.<sup>(8)</sup>

However, results of the most influential research about the relationship between oral mucosa lesions and anemia were inconclusive and other studies have also found conflicting results.<sup>(9-11)</sup>

**Materials and Methods**

This historical cohort study was conducted on 20 consecutive patients with anemia as the experimental group of 9 males, 11 females, aged (41.7±12.6) and 20 healthy ones as the control group of 8 males, and 12 females, aged(40.5±15.08) that was matched with the experimental group.

All participants referred to Shariati hospital Tehran-Iran from January 2010 to May 2010.

The ethical committee of the university approved the study (No:P/165/d). Anemia was confirmed by paraclinical tests, consist-

ing of Fe, Ferritin, RDW-CV, HCT, MCH, MCV, Hb, RBC, TIBC. All participants were evaluated by oral pathologist for diagnosis of sore mouth sign and symptoms (atrophic glossitis, prickly sensation of tongue, pale mucosa, recurrent aphthous ulcer,angular cheilitis, erythematous mucositis and glossodynia.<sup>(12)</sup>

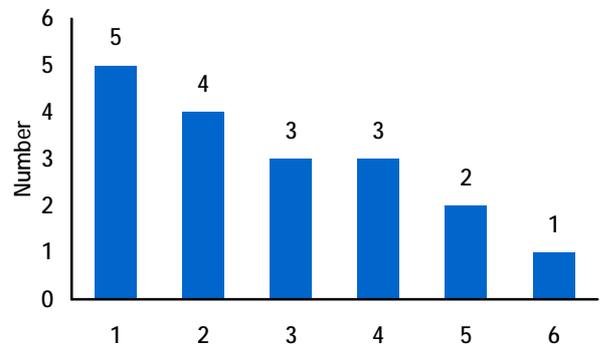
The data were analyzed using Chi-square test in SPSS version 16. P value of 0.05 was considered indicative of a statistically significant difference. Attributable risk (AR) and related risk (RR) were calculated, too.

**Results**

In this study, we evaluated sore mouth signs and symptoms in 20 anemic and 20 healthy participants. Table 1 indicates the correlations between anemia and sore mouth (P<0.05).

Related risk (RR) for incidence of sore mouth in anemic patients was 9 times more than control group (RR= 9).

Attributable risk (AR) of sore mouth incidence in anemic patients was 40 percent. (AR= 40%)



**Figure 1. Illustrates the signs and symptoms of sore mouth in 20 anemic patients**

- 1- AG= Atrophic glossitis
- 2- ROU=Recurrent oral ulceration
- 3- POM=Pale oral mucosa
- 4- TBS=Tongue burning sensation
- 5- GD=glossodynia
- 6- AC=Angular cheilitis

**Table 1. Prevalence of sore mouth in experimental and control groups**

Groups	Sore mouth Not found No (%)	Found No (%)	Total	P-value
Control	19 (95)	1(5)	20	<0.05
Experimental	11(55)	9 (45)	20	

## Discussion

According to the results of the study, anemia had a positive correlation with sore mouth. The results are in agreement with those of Lu Sy et al.<sup>(12)</sup> One possible explanation for this relationship is that anemia with hemoglobin decrease leads to the decreasing of oxygenation to oral soft tissues that leads to sore mouth.<sup>(13,14)</sup>

However, the results are in disagreement with those of Vucicevic-Boras et al's study, in that, they found no correlation between anemia and sore mouth.<sup>(14)</sup>

The possible justification for this discrepancy is the difference in the accuracy of lab tests and neglecting the confounding factors.

In this study; out of 20 anemic patients, 9 cases (45%) have signs and symptoms of sore mouth. The results are in agreement with those of Petavy-Catala et al.<sup>(15)</sup>

In our study, 20% of the experimental group had recurrent aphthous ulcer and only 5% of the control group had this lesion. Although this relationship is not statistically significant, this result has also been observed in the previous studies.<sup>(16-20)</sup>

In this study, 25% of the experimental group had glossitis with a different degree of papillary atrophy and nobody in the control group had this lesion. Despite the fact that this relationship was not statistically significant, our results support those of Graells's study.<sup>(20)</sup>

In our study, the prevalence of glossodynia and glossities in the experimental group was 15% and 10% respectively. The present findings show more prevalence of these lesions to the other studies.<sup>(21,22)</sup> A possible explanation for this finding is high proliferation rate of lingual mucosa and demanding of acid folic and ferrous for cell proliferation. Decreasing of these micronutrients elements can also facilitate candidal proliferation and candidiasis incidence that lead to glossitis and glossodynia.

## Conclusion

According to this study, it seems iron deficiency anemia has a significant role in sore mouth incidence. Evaluation of anemia treatment effect on sore mouth elimination is recommended.

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