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Assessment of Haemoglobin Level in Patients with Recurrent Oral Ulcer of a Sample of Malaysian Population

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ABSTRACT

Recurrent oral ulcers are common painful oral mucosal conditions seen among patients which generally last a few days and typically affect the tongue, lips, cheeks, and can appear in any part of the mouth. The purpose of this study was to investigate the relationship between Haemoglobin [Hb] statuses with recurrent oral ulceration [ROU] by measuring the Hb level. Forty seven adult Malaysian patients attending the oral medicine clinic, IIUM, were examined for ROU and its relation with Hb level using haemoglobinometer. Both minor and major ulcers were observed in the patients attending oral medicine clinic of Kulliyah of Dentistry. The male and female patients with ROU had significantly low haemoglobin level with $P < 0.001$. In conclusion, the present study shows high relationship between recurrent oral ulceration and haemoglobin level.

INTRODUCTION

Recurrent oral ulceration [ROU] is a term used to describe small round, painful, mouth ulcers which typically last a few days but recur every few weeks or months, it is a common disorder of the oral mucosa; that occurs on the mucous membrane of the oral cavity [4,2]. Many etiological predisposing factors may have an important role in development of oral ulcers such as heredity, stress, tobacco, infectious skin diseases, gastrointestinal diseases, rheumatic diseases, drugs, microorganisms' infection, trauma, hormonal changes, radiotherapy, nutrition and dietary habits, family history has been found in up to 40% of patients [3,4,5]. Also many studies have demonstrated that haematological disorders can cause ROU [6,7]. Anaemia, caused by hematinic (iron, folic acid, or vitamin B 12) deficiencies, has been reported in patients with ROU [8,9]. Several studies from different countries, have demonstrated hematinic deficiencies to be twice more common in patients with ROU than healthy control subjects [3,5]. Iron is essential for the overall integrity and health of epithelia of digestive tract and its deficiency can affect the integrity of the ROU and leads to mucosal susceptibility to irritants [10, 11].

Previous studies showed that the prevalence and distribution of ROU among different population, in females is more than in males and as follow India, Jordan, USA, Thailand, Saudi Arabia and Iraq [12,13,14,15,16,17]. In Malaysia, the prevalence of oral recurrent aphthous stomatitis (ORAS), was highest in the indigenous people of Sabah and Sarawak (1.2%) followed by the Chinese (0.7%), the Malays (0.5%) and the Indians (0.1%) [18]. Therefore, the aim of the present study is to determine the haemoglobin level correlated with ROU in a sample of Malaysians attending the Department of Oral Medicine, Kulliyah of Dentistry; IIUM.

METHODS

Patient and Study Design

Forty seven Malaysians patients (23 males and 24 females) ageing between 30-50 years attending oral medicine clinic of Kulliyah of Dentistry, IIUM, during the period from November 2012 to February 2013; they were clinically diagnosed having ROU. The control group comprised 40 (20 males and 20 females) healthy individuals; matched for gender and age. The patients and control individuals were chosen without any history of habit of tobacco smoking and any major illness in recent past, such as steroid drugs' medication, GIT diseases, dermatological diseases, orthodontic treatment; intraoral appliances. Drops of blood samples taken by finger prick were collected from each patient and control subjects and processed for the estimation of hemoglobin levels using haemoglobinometer (Hemocue Hb 201+, Translab).

Statistical Analysis

All data were analyzed by using Student t-test, SPSS version 20.0. *P* values of < 0.05 were considered to be statistically significant and < 0.01 as highly significant.

RESULTS

Clinical Observation

Intraoral examination showed two types of ROU in the patients attending the Oral Medicine Clinic of Kulliyah of Dentistry. The minor ulcers observed in this study were the most common ulcers, localized in the nonkeratinized mucosa, especially the lips, cheeks, floor of the mouth, and lateral border of the tongue. They are small, round- or oval-shaped, shallow ulcers; characterized by single or few ulcers (less than 5) with a size of about 5mm in diameter. The ulceration is covered by a yellowish white fibropurulent membrane encircled by erythematous halo (Figure 1). The major ulcers were less common; they are localized in the keratinized and non-keratinized mucosa, such as the soft palate, on the lips, dorsal surface of the tongue and throat. They are larger of a size measures 2 cm in diameter, occur in the form of single or few ulcers (less than 5). They are deeper and more painful than minor ulcer (Figure 2).



Figure 1. "Minor ROU in the lower lip."

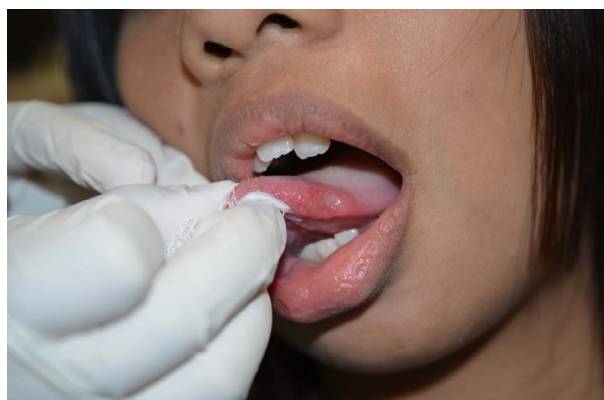


Figure 2. "Major ROU in the lateral border of the tongue."

Hematological Observation

The present study has demonstrated that patients with ROU tend to have low haemoglobin level compared to control group, 19 out of 23 male patients and 21 out of 24 female patients had low haemoglobin level; *P* value for both gender was; $p < 0.05$

showing statistically significant (**Table 1**). The patients with ROU showed significantly lower levels of hemoglobin with $P < 0.001$. The Mean values of hemoglobin and levels of control group were 13.5 mg/dL in males and 11mg/dL in females, whereas those of ROU group were 12.05 ± 0.8 mg/dL and 10.05 ± 1.06 mg/dL respectively (**Table 2.1, 2.2, 3.1, and 3.2**).

Table 1. "Number of patients with ROU with normal and low haemoglobin level."

Gender	Normal Hb Level (No. Of Persons)	Low Hb Level (No. Of Persons)
Male	4	19
Female	3	21

Table 2.1. "The haemoglobin level in male patients with ROU."

Hb Level	N	Mean	Std. Deviation	Std. Error Mean
	23	12.504	.8798	.1835

Table 2.2. "Statistical analysis of the haemoglobin level in male patients with ROU."

Hb Level	Test Value = 13.5				
	t	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference
					Lower Upper
	-5.427	22	.000	-.9957	-1.376 -.615

Table 3.1. "The haemoglobin level in female patients with ROU."

Hb Level	N	Mean	Std. Deviation	Std. Error Mean
	24	10.067	1.5390	.3141

Table 3.2. "Statistical analysis of the haemoglobin level in female patients with ROU."

Hb Level	Test Value = 11.5				
	t	Df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference
					Lower Upper
	-4.563	23	.000	-1.4333	-2.083 -.783

DISCUSSION

The present study has demonstrated two types [minor and major] of ROU in the oral cavity of Malay subjects attending the Oral Medicine Clinic of Kulliyah of Dentistry. The morphology and characteristics of the present oral ulcer is similar to previously described ROU [5, 8]. ROU are categorized by their morphological appearance into three different clinical variants; minor, major, and haerpetiform [4, 7]. In the present study we did not observe the haerpetiform ulcer; this might be related to the limited number subjects attending our clinic.

The precise aetiology of a ROU remains unclear; it is likely to be a combination of factors including a genetic vulnerability and a certain trigger; possible triggers may include feeling stressed or anxious, and haemoglobin deficiency [4]. The nutritional deficiency is associated with apthous stomatitis [B12, folate, and iron] which can cause a decrease in the thickness of the oral mucosa leading to ROU formation [19]. However, some controversy regarding the effect of haemoglobin deficiency does exist. Although many studies have demonstrated a significant relationship between vitamin B12 deficiency and ROU, other researchers did not found a statistically significant effect of haemoglobin level and serum levels of folic acid and ferritin on ROU [20]. Although there was a significant low red cell folate in the ROU Thai patients; haemoglobin, haematocrit and mean corpuscular haemoglobin concentrations were in the normal range in patients with ROU and control subjects [6]. Though haemoglobin levels and red blood cell indices were normal in patients with recurrent apthous stomatitis, there was still a small minority of patients with deficiencies of iron, folate, or vitamin B12 [1].

It has been reported that 59% of patients with ROU showed resolution and 28% showed significant improvement when they replaced the deficient element [21]. Treatment of patient with ROU suffering from vitamin B12 malabsorption by the administration of hydroxocobalamin showed clinical resolution [22]. However, other studies have shown that ROU patients with iron deficiency had a less remarkable response when they replaced with the deficient element [23].

In the present study ROU in a sample of Malaysian subjects was associated with haemoglobin deficiency; this is in agreement with previous studies that showed a significant role of haematological parameters [haemoglobin, ferritin, haematocrit, folate and B12] in the pathogenesis of ROU [5, 8, 9]. The Malaysian population consists of three largest Malaysian groups; Malays, Chinese, Indians and small minority of European and Middle Eastern descent [24]. Further studies with larger sample size are in progress to investigate the association of haematological parameters with the development of ROU in different Malaysian groups.

CONCLUSION

The haematological disorders (haemoglobin level), in this research; is highly correlated to the aetiology of recurrent oral ulceration.

REFERENCES

1. Porter SR and Leao JC. Review article: oral ulcers and its relevance to systemic disorders. *Aliment Pharmacol Ther.* 2005;21:295-306.
2. Sawair FA. Does smoking really protect from recurrent aphthous stomatitis?. *Ther Clin Risk Manag.* 2010;6:573-577.
3. Jurge S, et al. Mucosal disease series. Number VI. Recurrent aphthous stomatitis. *Oral Dis.* 2006;12:1-21.
4. Preeti L, et al. Recurrent aphthous stomatitis. *J Oral Maxillofac Pathol.* 2011;15:252-256.
5. Scully C. Clinical practice: aphthous ulceration. *N Engl J Med.* 2006;355:165-172.
6. Thongprasom K, et al. Hematologic abnormalities in recurrent oral ulceration. *Southeast Asian J Trop Med Public Health.* 2002;33:872-877.
7. Scully C and Porter S. Oral mucosal disease: Recurrent aphthous stomatitis. *Br J Oral Maxillofac Surg.* 2008;46:198-206.
8. Matute GR and Alonso ER. Recurrent Aphthous Stomatitis in Rheumatology. *Reumatol Clin.* 2011;7:323-328.
9. Tarakji B, et al. The effect of dietary habits on the development of the recurrent aphthous stomatitis. *Nigerian Med J.* 2012;53:9-11.
10. Ranganathan K and Kavitha R. Proliferation and apoptosis markers in oral submucous fibrosis. *J Oral Maxillofac Pathol.* 2011;15:148-153.
11. Karthik H, et al. Role of Hemoglobin and Serum Iron in Oral Submucous Fibrosis: A Clinical Study. *Scientific World Journal.* 2012;Article ID 254013,1-5.
12. Patil S, et al. Prevalence of recurrent aphthous ulceration in the Indian Population. *J Clin Exp Dent.* 2014;6:e36-40.
13. Safadi RA. Prevalence of recurrent aphthous ulceration in Jordanian dental patients. *BMC Oral Health.* 2009;9:31:1-5.
14. Shulman JD. An exploration of point, annual, and lifetime prevalence in characterizing recurrent aphthous stomatitis in USA children and youths. *J Oral Pathol Med.* 2004; 33:558-566.
15. Pongissawaranun W and Laohapand P. Epidemiologic study on recurrent aphthous stomatitis in a Thai dental patient population. *Community Dent Oral Epidemiol.* 1991; 19:52-53.
16. Al-Mobeeriek A and AlDosari AM. Prevalence of oral lesions among Saudi dental patients. *Ann Saudi Med.* 2009;29:365-368.
17. Abdullah MJ. Prevalence of recurrent aphthous ulceration experience in patients attending Piramird dental speciality in Sulaimani City. *J Clin Exp Dent.* 2013;5:e89-94.
18. Zain RB. Oral recurrent aphthous ulcers/stomatitis: prevalence in Malaysia and an epidemiological update. *J Oral Science.* 2000;42:15-19.
19. Damm DD, Allen CM, Bouquot JE, Neville BW. *Oral and maxillofacial pathology (3rd ed.).* Philadelphia: W.B.Saunders,pp. 331-336;2008.
20. Koybasi S, et al. Recurrent aphthous stomatitis: investigation of possible etiologic factors. *Am J Otolaryngol.* 2006;27:229-232.
21. Wray D, et al. Nutritional deficiencies in recurrent aphthae. *J Oral Pathol.* 1978;7:418-423.
22. Garcia BG, et al. A Case Report of Pernicious Anemia and Recurrent Aphthous Stomatitis. *J Contemp Dent Pract.* 2009;10:83-89.
23. Rennie JS, et al. Recurrent aphthous stomatitis. *Br Dent J.* 1985;159:361-367.
24. Mahari MZ. Demographic Transition in Malaysia: The Changing Roles of Women. The 15th Conference of Commonwealth Statisticians; 2011 Feb 7-10; New Delhi, India.