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ORIGINAL ARTICLE

Hematinic deficiencies and anemia statuses in recurrent aphthous stomatitis patients with or without atrophic glossitis

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KEYWORDS
Atrophic glossitis;
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Vitamin B12

Background/Purpose: Some of recurrent aphthous stomatitis (RAS) patients had concomitant atrophic glossitis (AG). This study assessed whether RAS patients with AG (AG+/RAS patients) or without AG (AG−/RAS patients) had anemia and hematinic deficiencies and to evaluate whether RAS combined with AG or RAS itself was a significant factor causing anemia and hematinic deficiencies in AG+/RAS or AG−/RAS patients, respectively.
Methods: The mean corpuscular volume (MCV) and mean blood hemoglobin (Hb), iron, vitamin B12, and folic acid levels were measured and compared between any two of three groups of 160 AG+/RAS patients, 195 AG-/RAS patients, and 355 healthy control subjects.
Results: Both AG+/RAS and AG−/RAS patients had significantly lower mean Hb, iron, and vitamin B12 levels as well as significantly greater frequencies of Hb, iron, vitamin B12, and folic acid deficiencies than healthy control subjects. Moreover, AG+/RAS patients had significantly lower mean Hb and serum iron level (for women only) and significantly greater frequencies of Hb and iron deficiencies than AG−/RAS patients. Of 69 anemia AG+/RAS patients, 30 (43.5%) had normocytic anemia and 23 (33.3%) had iron deficiency anemia. Of 38 anemia AG−/RAS patients, 26 (68.4%) had normocytic anemia and 5 (13.2%) had iron deficiency anemia.
Conclusion: We conclude that some of AG+/RAS or AG−/RAS patients do have anemia and hematinic deficiencies and AG+/RAS patients do have severer anemia statuses and iron

Conflicts of interest: The authors have no conflicts of interest relevant to this article.

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deficiency than AG−/RAS patients. RAS combined with AG or RAS itself does play a significant role in causing anemia and hematinic deficiencies in AG+/RAS or AG−/RAS patients, respectively.

Introduction

Recurrent aphthous stomatitis (RAS) is a common oral mucosal disease characterized by recurrent and painful ulcerations on the nonkeratinized oral mucosae such as labial, buccal, alveolar, and ventral tongue mucosae. The prevalence of RAS ranges from 5% to 20% depending on the population evaluated.[1] In Taiwan, the prevalence of RAS is 10.5% in the general population.[2]

Although several etiological factors have been proposed, the exact causes of RAS are still not very clear.[3] The results of previous studies on tissue infiltrated mononuclear cells favor the role of cell-mediated cytotoxicity in the immunopathogenesis of RAS.[4] In addition to immune dysregulation, multiple nutritional deficiencies including deficiencies of vitamins B1, B2, B6, and B12, folate, iron, and ferritin are considered to be the possible etiologies of RAS.[4] Our previous studies showed that 57 (20.9%), 55 (20.1%), 13 (4.8%) and 7 (2.6%) of 273 RAS patients as well as 39 (22.2%), 47 (26.7%), 13 (7.4%) and 3 (1.7%) of 176 atrophic glossitis (AG) patients have deficiencies of Hb, iron, vitamin B12, and folic acid, respectively.[4,5] Our clinical experience revealed that a portion of RAS patients may have concomitant AG. Thus, it was interesting to know whether RAS patients with AG (AG+/RAS patients) had severer anemia status and hematinic deficiencies than RAS patients without AG (AG−/RAS patients).

In our oral mucosal disease clinic, patients with AG, burning mouth syndrome (BMS), oral lichen planus (OLP), RAS, oral submucous fibrosis (OSF), and other oral mucosal diseases are frequently encountered.[4–23] For AG, BMS, OLP, RAS and OSF patients, complete blood count, serum iron, vitamin B12, folic acid, homocysteine, and anti-gastric parietal cell antibody (GPCA) levels are frequently examined to assess whether these patients have anemia, hematinic deficiencies, and serum GPCA positivity.[4–20] In this study, we collected 355 RAS patients including 160 AG+/RAS and 195 AG−/RAS patients. Their complete blood counts as well as serum iron, vitamin B12, folic acid, homocysteine and GPCA levels were examined and compared with the corresponding data of 355 age- and sex-matched healthy control subjects. The purposes of this study were to study the anemia statuses and hematinic deficiencies in these 160 AG+/RAS and 195 AG−/RAS patients, to assess whether AG+/RAS patients had severer anemia status and hematinic deficiencies than AG−/RAS patients, to evaluate whether AG−/RAS patients still had anemia and hematinic deficiencies, to find out what were the common types of anemia in AG+/RAS and AG−/RAS patients, and to evaluate whether RAS combined with AG or RAS itself was a significant factor that caused anemia and hematinic deficiencies in AG+/RAS patients or AG−/RAS patients, respectively.

Materials and methods

Subjects

In this study, 160 (39 men and 121 women, age range 18—90 years, mean 55.7 ± 15.8 years) AG+/RAS patients and 195 (67 men and 128 women, age range 18—90 years, mean 50.4 ± 15.6 years) AG−/RAS patients were collected in the oral mucosal disease clinic of National Taiwan University Hospital (NTUH). For comparisons, 355 age-(±2 years of each patient's age) and sex-matched healthy control subjects (106 men and 249 women, age range 20—89 years, mean age 53.1 ± 14.7 years) were included in this study. All RAS patients and control subjects were seen consecutively, diagnosed, and treated in the Department of Dentistry, NTUH from July 2007 to July 2016. Patients were diagnosed as having RAS when they had at least one episode of oral ulcerations on movable oral mucosa per month since childhood.[4] In this study, 160 AG+/RAS patients had concomitant partial or complete AG which was defined as partial or complete absence or flattening of filiform papillae on the dorsal surface of the tongue, respectively.[5] In contrast, 195 AG−/RAS patients did not have either partial or complete AG. RAS patients with betel quid chewing habit or autoimmune diseases (such as systemic lupus erythematosus, rheumatoid arthritis, Sjogren's syndrome, pemphigus vulgaris, and cicatricial pemphigoid) were excluded. Moreover, patients with traumatic ulcers or with aphthous-like ulcers associated with systemic disorders including Behcet's syndrome, celiac disease, gluten-sensitive enteropathy, inflammatory bowel diseases, human immunodeficiency virus infection, and cyclic neutropenia were also excluded.[24] In addition, RAS patients with serum creatinine concentrations indicative of renal dysfunction (i.e., men, >131 μmol/L; women, >115 μmol/L), and who reported a history of stroke, heavy alcohol use, or diseases of the liver, kidney, or coronary arteries were also excluded.[25] Healthy control subjects had either dental caries, pulpal disease, malocclusion, or missing of teeth but did not have any oral mucosal or systemic diseases. None of the RAS patients had taken any prescription medication for RAS or AG at least 3 months before entering the study.

The blood samples were drawn from all RAS patients and healthy control subjects for measurement of complete blood count, serum iron, vitamin B12, folic acid, homocysteine, and GPCA levels. All RAS patients and healthy control subjects signed the informed consents before entering the study. This study was reviewed and approved by the Institutional Review Board at the NTUH.