Journal of the Formosan Medical Association (2017) xx, 1–8

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journal homepage: www.jfma-online.com

Original Article

Hematinic deficiencies and anemia statuses in anti-gastric parietal cell antibody-positive or all autoantibodies-negative erosive oral lichen planus patients

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Received 28 November 2017; received in revised form 5 December 2017; accepted 13 December 2017

KEYWORDS
Anti-gastric parietal cell antibody;
Oral lichen planus;
Iron;
Macrocytosis;
Pernicious anemia;
Vitamin B12 deficiency

Background/Purpose: Approximately 27% of erosive oral lichen planus (EOLP) patients have serum anti-gastric parietal cell antibody (GPCA) positivity. This study assessed whether serum GPCA or EOLP itself was a significant factor that caused hematinic deficiencies and anemia statuses in GPCA-positive or autoantibodies-negative EOLP patients ($GPCA^+$/EOLP and Abs^-/EOLP patients).
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 41 $GPCA^+$/EOLP patients, 198 Abs^-/EOLP patients, and 184 healthy control subjects.
Results: $GPCA^+$/EOLP patients had significantly lower mean Hb, iron (for women only), and vitamin B12 level as well as significantly greater frequencies of Hb, iron, and vitamin B12 deficiencies than healthy control subjects. Moreover, $GPCA^+$/EOLP patients had significantly lower serum vitamin B12 level and significantly higher MCV as well as a significantly greater frequency of vitamin B12 deficiency than Abs^-/EOLP patients. Furthermore, Abs^-/EOLP patients did have significantly lower mean Hb, MCV, iron (for women only), vitamin B12, and folic acid levels as well as significantly greater frequencies of Hb and iron deficiencies than healthy control subjects.

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https://doi.org/10.1016/j.jfma.2017.12.009

Conclusion: We conclude that serum GPCA is the major factor that causes vitamin B12 deficiency, macrocytosis and pernicious anemia in $GPCA^+$/EOLP patients. Approximately 29—32% GPCA-positive EOLP patients have vitamin B12 deficiency or macrocytosis and about 23—25% vitamin B12 deficiency or macrocytosis EOLP patients have pernicious anemia. ELOP itself does play a significant role in causing anemia and hematinic deficiencies in Abs^-/EOLP patients.

Introduction

Our previous study has shown the presence of serum antinuclear (ANA), anti-smooth muscle (SMA), anti-mitochondrial (AMA), anti-gastric parietal cell (GPCA), anti-thyroglobulin (TGA), and anti-thyroid microsomal autoantibodies (TMA) in 28.4%, 8.2%, 1.7%, 26.7%, 21.2% and 24.7% of 292 erosive oral lichen planu (EOLP) patients.[1] It is well known that GPCA can induce destruction of gastric parietal cells, resulting in failure of intrinsic factor production[2,3] and vitamin B12 deficiency that finally leads to the status of pernicious anemia (PA).[4,5] Vitamin B12 deficiency may also be due to insufficient intake of vitamin B12-containing foods, vitamin B12 malabsorption, and transcobalamin II deficiency.[5] Because multiple factors are involved in Hb deficiency (anemia) in EOLP patients, it is interesting to know what factors are most important for the development of anemia or hematinic deficiencies in our GPCA-positive and —negative EOLP patients.

In our oral mucosal disease clinic, patients with atrophic glossitis (AG), burning mouth syndrome (BMS), EOLP, and recurrent aphthous stomatitis (RAS) are frequently encountered.[6—23] For these four specific groups of patients, complete blood count, serum iron, vitamin B12, folic acid, homocysteine, ANA, SMA, AMA, GPCA, TGA, and TMA levels were frequently examined to assess whether these patients have anemia, hematinic deficiencies and serum ANA, SMA, AMA, GPCA, TGA, or TMA positivity.[6—23] Our previous studies discovered that 16.1%, 20.2%, 16.1% and 4.0% of 124 GPCA-positive patients (75 AG and 49 BMS patients), and 16.3%, 14.2%, 6.3% and 1.1% of 190 TGA- or TMA-positive patients (83 AG and 107 BMS patients) have Hb, serum iron, vitamin B12, and folic acid deficiencies, respectively.[9,10] To assess the roles of GPCA positivity and the disease of EOLP itself in the development of anemia and hematinic deficiencies in GPCA-positive or all autoantibodies-negative EOLP patients, 41 GPCA-positive EOLP patients ($GPCA^+$/EOLP patients) without ANA, SMA, AMA, TGA and TMA positivities and 198 all six aforementioned autoantibodies-negative EOLP patients (Abs^-/EOLP patients) were collected. Their complete blood counts as well as serum iron, vitamin B12, folic acid, and homocysteine levels were examined and compared with the corresponding data of 184 healthy control subjects retrieved from our previous study.[13] The purposes of this study were to study the hematinic deficiencies and anemia statuses in these 41 $GPCA^+$/EOLP patients and 198 Abs^-/EOLP patients and to clarify the roles of the serum GPCA and/or the disease of EOLP itself in the final development of anemia and hematinic deficiencies in our $GPCA^+$/EOLP and Abs^-/EOLP patients.

Materials and methods

Subjects

In this study, 41 (10 men and 31 women, age range 36—86 years, mean 61 ± 12 years) $GPCA^+$/EOLP patients and 198 (51 men and 147 women, age range 22—87 years, mean 57 ± 15 years) Abs^-/EOLP patients were collected in the oral mucosal disease clinic of National Taiwan University Hospital (NTUH). For comparisons, the corresponding blood data of 184 healthy control subjects (28 men and 156 women, age range 29—87 years, mean 57 ± 11 years) were retrieved from our previous study and included in this study.[13] All the EOLP patients and healthy control subjects were seen consecutively, diagnosed, treated, and selected in the oral mucosal disease clinic or dental clinic of NTUH from July 2007 to July 2015. OLP was diagnosed according to the criteria described previously.[1,8] However, EOLP patients with ANA, SMA, AMA, TGA and/or TMA positivities, areca quid chewing habit, autoimmune diseases (such as systemic lupus erythematosus, rheumatoid arthritis, Sjogren's syndrome, pemphigus vulgaris, and cicatricial pemphigoid), inflammatory diseases, RAS, malignancy, or recent surgery were excluded. In addition, all EOLP patients with serum creatinine concentrations indicative of renal dysfunction (ie, men, >131 μM; women, >115 μM), and who reported a history of stroke, heavy alcohol use, or diseases of the liver, kidney, or coronary arteries were also excluded.[24] 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 our included EOLP patients had taken any prescription medication for EOLP at least 3 months before entering the study.

The blood samples were drawn from all included EOLP patients and healthy control subjects for measurement of complete blood count, serum iron, vitamin B12, folic acid, and homocysteine concentrations as well as serum ANA, SMA, AMA, GPCA, TGA, and TMA levels. All EOLP 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.

Determination of complete blood count and serum iron, vitamin B12, folic acid and homocysteine concentrations

The complete blood count and serum iron, vitamin B12, folic acid, and homocysteine concentrations were determined by the routine tests performed in the Department of Laboratory Medicine of NTUH as described previously.[6—22]

Please cite this article in press as: Chang JY-F, et al., Hematinic deficiencies and anemia statuses in anti-gastric parietal cell antibody-positive or all autoantibodies-negative erosive oral lichen planus patients, Journal of the Formosan Medical Association (2017), https://doi.org/10.1016/j.jfma.2017.12.009