Blood examination is necessary for oral mucosal disease patients

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According to the World Health Organization (WHO), anemia or hemoglobin deficiency is defined as having a hemoglobin concentration <13 g/dL for men and <12 g/dL for women.1 Iron deficiency (serum iron level <60 µg/dL) may lead to iron deficiency anemia.1 Vitamin B12 deficiency (serum vitamin B12 level <200 pg/mL) or folic acid deficiency (serum folic acid level <4 ng/mL) may result in macrocytic anemia.2,3 Moreover, deficiencies of vitamin B12 and/or folic acid may lead to abnormally high serum homocysteine level (>12.4 µM).4 Serum gastric parietal cell autoantibody (GPCA) positivity may induce destruction of gastric parietal cells and subsequently result in failure of production of intrinsic factor and absorption of vitamin B12 from the terminal ileum, finally leading to vitamin B12 deficiency.2,4 Because anemia and hematocytic deficiencies may cause or aggravate oral mucosal diseases such as atrophic glossitis (AG), burning mouth syndrome (BMS), oral lichen planus (OLP), recurrent aphthous ulcerations (RAU), or oral submucous fibrosis (OSF), in our oral mucosal disease clinic, complete blood count, serum iron, vitamin B12, folic acid and homocysteine levels, and serum GPCA titers are usually examined to check whether patients with these 5 diseases have microcytic, normocytic or macrocytic anemia, deficiencies of hematinsics, abnormally high serum homocysteine level, and serum GPCA positivity.5–9

After blood examination of patients with the five abovementioned oral mucosal diseases, we found that deficiencies of hemoglobin, iron, vitamin B12 and folic acid can be detected in 22.2%, 26.7%, 7.4%, and 1.7% of 176 AG patients,5 in 22.3%, 20.3%, 2.5%, and 1.5% of 399 BMS patients,6 in 21.9%, 13.6%, 7.1%, and 0.3% of 352 OLP patients,7 in 20.9%, 20.1%, 4.8%, and 2.6% of 273 RAU patients,8 and in 7.4%, 20.6%, 50.0%, and 41.2% of 68 male OSF patients,9 respectively. Moreover, abnormally high serum homocysteine levels can be discovered in 21.6% of 176 AG patients,5 in 22.3% of 399 BMS patients,6 in 14.8% of 352 OLP patients,7 and in 7.7% of 273 RAU patients.8 In addition, serum GPCA positivity can be recognized in 26.7% of 176 AG patients,5 in 22.3% of 399 BMS patients,6 in 14.8% of 352 OLP patients,7 and in 7.7% of 273 RAU patients.8 Furthermore, AG and BMS patients have a significantly higher frequency of hemoglobin, iron or vitamin B12 deficiency, of abnormally elevated blood homocysteine level, or of serum GPCA positivity than healthy control individuals.5,6 OLP patients have a significantly higher frequency of hemoglobin, iron, or vitamin B12 deficiency and of abnormally high blood homocysteine level than healthy control individuals.7 RAU patients have a significantly higher frequency of hemoglobin, iron, vitamin B12, or folic acid deficiency and of abnormally high blood homocysteine levels than healthy control individuals.7 Male OSF patients have a significantly higher frequency of hemoglobin, vitamin B12, or folic acid deficiency and of serum GPCA positivity than healthy control individuals.7 Therefore, approximately 21.1%, 19.3%, 7.5%, 3.5%, 16.7% and

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17.0% of oral mucosal disease patients have hemoglobin, iron, vitamin B12 or folic acid deficiency, abnormally high blood homocysteine level, and serum GPCA positivity, respectively.\(^5\)–\(^9\)

Because approximately one-fifth of our oral mucosal disease patients have hemoglobin deficiency or anemia, we further study the types of anemia in these oral mucosal disease patients. If iron deficiency anemia is defined as the presence of a hemoglobin concentration <13 g/dL for men and <12 g/dL for women, a mean corpuscular volume (MCV) <80 fl, and a low serum iron level (<60 μg/dL), we found that 14.8% of 176 AG patients,\(^5\) 3.5% of 399 BMS patients,\(^6\) 10.2% of 352 OLP patients,\(^7\) 9.2% of 273 RAU patients,\(^8\) and 1.5% of 68 male OSF patients\(^9\) can be classified as having iron deficiency anemia. In addition, if pernicious anemia is defined as the presence of a hemoglobin concentration <13 g/dL for men and <12 g/dL for women, an MCV ≥100 fl, a low serum vitamin B12 level (<200 pg/mL), and serum GPCA positivity, we discovered that 7.4% of 176 AG patients,\(^5\) 2.5% of 399 BMS patients,\(^6\) 1.7% of 352 OLP patients,\(^7\) 0.7% of 273 RAU patients,\(^8\) and none of 68 male OSF patients\(^9\) can be classified as having pernicious anemia. These findings indicate that by strict WHO criteria there are approximately 8.0% of our oral mucosal disease patients having iron deficiency anemia, but pernicious anemia is found in only 2.4% of our oral mucosal disease patients.\(^5\)–\(^9\)

Pernicious anemia is due to vitamin B12 deficiency. The presence of GPCA in patients’ sera may finally result in vitamin B12 deficiency as stated before.\(^2\)–\(^4\) However, it is interesting to note that only 12.9% of 124 GPCA-positive,\(^2\) 18.9% of 90 vitamin B12-deficient,\(^3\) and 16.7% of 60 macrocytosis (defined as MCV ≥100 fl) oral mucosal disease patients are discovered to have pernicious anemia by the WHO definition.

We conclude that anemia, hematinic deficiencies, high serum homocysteine level, and serum GPCA positivity are relatively frequently found in oral mucosal disease patients. Therefore, blood examinations including complete blood count as well as determination of serum iron, vitamin B12, folic acid, and homocysteine levels, and of serum GPCA titers are necessary for oral mucosal disease patients before giving the treatments for this specific group of patients.

References


