中文題目：合併維生素 B12 缺乏與純性紅血球再生不良的大球性貧血

英文題目：Co-existing Vitamin B12 Deficiency and Pure Red Cell Aplasia in a Patient of Macrocytic Anemia: A Case Report

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Introduction:

Macrocytosis is defined as a red blood cell (RBC) mean corpuscular volume (MCV) above the upper limit of normal, which is typically >100 femtoliters (fL) in adults. Causes of macrocytic anemia include megaloblastic anemia, reticulocytosis, alcoholism, liver disease, hypothyroidism, myelodysplasia, etc. However, MCV is the average volume of the patient's RBCs. Therefore, in patients of anemia whose MCV is high, there is a possibility of mixed conditions of normocytic anemia and macrocytic anemia. We reported a patient of macrocytic anemia, who was treated with vitamin B12 initially, but later found out co-existing parvovirus B19 infection-induced pure red cell aplasia.

Case Presentation:

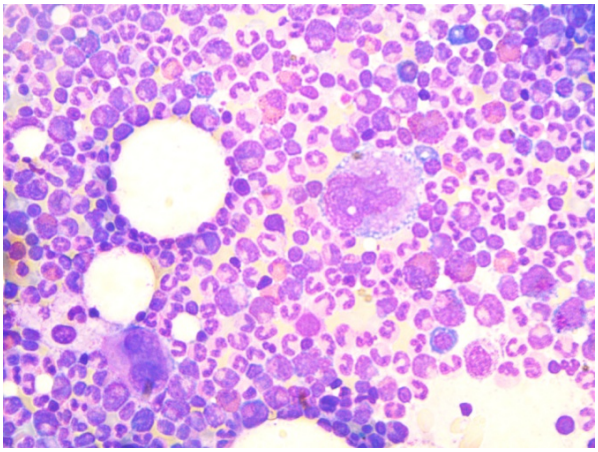
A 70-year-old man was referred to our hematologic outpatient clinic for investigation of severe anemia. On presentation, he was very pale, with mild exertional dyspnea. He denied any previous systemic medical history, family history, and habits of smoking or alcohol drinking. The laboratory studies showed a hemoglobin level of 3.6 g/dL with mean corpuscular volume of 120.7 fL. Investigation revealed low serum vitamin B12 level (<150 pg/mL) and borderline serum folic acid level (4 ng/mL). Therefore, nutrient supplement with IV hydroxocobalamin, oral mecobalamin and oral folic acid were prescribed. After treatment for one month, blood test revealed improved vitamin B12 deficiency, with serum vitamin B12 level increased to >1000 pg/mL. However, serial blood test revealed persistent low hemoglobin level (8.3 g/dL), with mean corpuscular volume level decreased to 90.2 fL.

His renal, liver and coagulation function were all within normal range. Due to both of immuno-fecal occult blood test and transferrin rapid test were positive, the patient underwent a complete endoscopic evaluation of gastrointestinal tract, which failed to reveal any obvious bleeding source. The serum gastrin level 71.5 pg/ml (13-115pg/ml) , which is not compatible with atrophic gastritis. Abdominal sonography for detecting splenomegaly, did not reveal any remarkable finding. Under the suspicion of myelodysplastic syndromes, bone marrow examination was done. Bone marrow aspirate smears showed increased myeloid:erythroid ratio to 12.7/1 with decreased erythroid series (figure 1) and presence of giant and bizarre proerythroblast; besides, eosinophilic intranuclear inclusions in proerythroblasts (figure 2) was noted. Pure red cell aplasia was therefore impressed and parvovirus B19 infection was considered. Serum parvovirus B19 PCR test returned positive for parvovirus B19 DNA afterwards.

Discussion:

Pure red cell aplasia (PRCA) is a syndrome characterized by severe reticulocytopenia in the peripheral blood, and marked reduction or absence of erythroid precursors in the bone marrow. Because of underproduction of red cell, the onset of anemia in PRCA is insidious, and the patient may only have little signs and symptoms until the anemia becomes severe. In the peripheral blood, the anemia is often normocytic and normochromic, rarely macrocytic, with an absolute reticulocyte count <10,000/microL (reticulocyte percentage <1%), while the white blood count and platelet count are normal. The diagnosis of PRCA requires a bone marrow examination, which shows normal overall cellularity, with absence or near absence of erythroblasts and otherwise morphologically normal hematopoietic lineages (<1% erythroblasts on the marrow differential count). Large proerythroblasts with pseudopodia and intranuclear inclusions are suggestive of parvovirus B19 infection. In all cases of PRCA, parvovirus B19 infection must be excluded, and polymerase chain reaction (PCR) testing on peripheral blood is a favorable choice for diagnosis. Intravenous immune globulin (IVIG) contains antibodies against parvovirus B19, which is highly effective to parvovirus-associated PRCA.

We reported this case to highlight the rare condition of co-existing vitamin B12 deficiency and pure red cell aplasia resulted from parvovirus B19 infection in a patient with initially macrocytic anemia. Further evaluations such as bone marrow examination would be appropriate if anemia persisted despite of adequate nutrient supplement. Moreover, parvovirus B19 infection should be considered in an individual with pure red cell aplasia, that bone marrow manifestation as absence of red cell precursors and presence of giant proerythroblast. Intravenous immune globulin is a specific and effective therapy to parvovirus-associated PRCA.



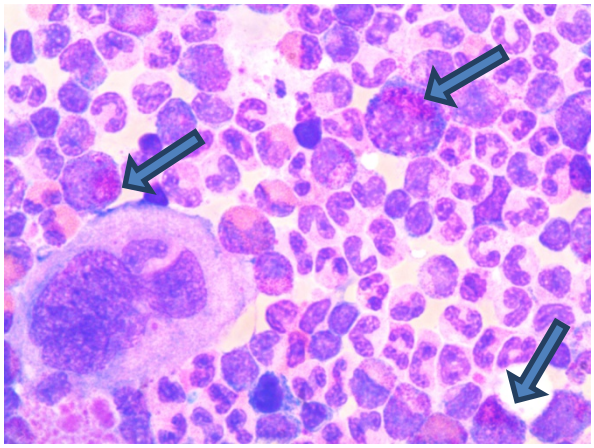


Figure 1 (left): Decreased erythroid series in bone marrow aspiration

Figure 2 (right): Eosinophilic intranuclear inclusion (arrows) in proerythroblast

Reference:

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