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Case Report Open Access

A Case with Pancytopenia and Autoimmune Hemolytic Anemia due to Vitamin B12 Deficiency

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Abstract

Vitamin B12 deficiency anemia often leads to very different clinical findings, such as fatigue, dyspnea, loss of appetite, etc. The following case has been diagnosed with both vitamin B12 deficiency and autoimmune hemolytic anemia that have been presented with seriously hemolysis and pancytopenia. 35-year-old male patient who was Syria refugees and consulted with us due anemia and etiology of pancytopenia by internal medicine service has been admitted and examined by hematology ward. Vitamin B12 deficiency related megaloblastic anemia had been overlooked and after appropriate treatment had been administered clinical symptoms recovered. Both clinical cases should be kept in mind because AHA and vitamin B12 deficiency related megaloblastic anemia could be seen rarely.

Keywords: Vitamin B12; Hemolytic anemia; Pancytopenia

Introduction

Vitamin B12 deficiency anemia often leads to very different clinical findings, such as fatigue, dyspnea, loss of appetite, etc. Severe pancytopenia may occur rarely in patients with vitamin B12 deficiency. Vitamin B12 deficiency often develops due to stomach or ileum operations, as well as different pathologies in this region that impair vitamin B12 absorption, autoimmune antibody development against intrinsic factor that secrets from gastric parietal cells and destruction of the parietal cells. Other autoimmune diseases may accompany the autoimmune-induced vitamin B12 deficiency.

Hashimoto's thyroiditis and vitiligo, which are observed in cases with pernicious anemia, can be exemplified related to this situation. Diagnosis of pernicious anemia (PA) depends on presence of atrophic gastritis indicated by gastric biopsy, decreased serum level of vitamin B12, hipersegment neutrophils concomitant peripheral megaloblastic in analyzing blood anemia, antibodies to intrinsic factor (IFA) and antibodies against gastric parietal cells (PHA) Sensitivity has been reported as 90% for PHA and 60% for IPA, but IFA is more specific.

PA is more common in northern Europe and over the age of 30 [1,2]. But vitamin B12 deficiency and autoimmune hemolytic anemia togetherness have been reported very rarely. The following case has been diagnosed with both vitamin B12 deficiency and autoimmune hemolytic anemia that have been presented with seriously hemolysis and pancytopenia. This young male case has been reported to be an interesting case that is quite rare in the literature and should be considered to keep in mind.

Case

35-year-old male patient who was Syria refugees and consulted with us due anemia and etiology of pancytopenia by internal medicine service has been admitted and examined by hematology ward. Elevated LDH and indirect bilirubin values, erythrocyte indexes compatible with macrocytic anemia and reticulocytopenia were abnormal in his first laboratory results. Patient has been inspected as lemon-colored skin and sclera jaundice (Figure 1).

Abnormal laboratory tests analysed as white blood cell (WBC) of 25 x 10^9/L with 60.2%, of neutrophils percentages and 30.2% of lymphocytes percentages; hemoglobin of 6.8 g/dL; hematocrit of 20.9%; mean corpuscular volume (MCV) of 129.3; platelet of 52 x 10^3; 8.26% with rates of reticulocytes in complete blood count (CBC); 86 of aspartate aminotransferase (AST); 3437 U/L of LDH; 4.48 mg/dL of total bilirubin; 0.45 mg/dL of direct bilirubin, 20 pg/ml (N:126-505) of vitamin B-12 vitamin in biochemistry tests, respectively.

Findings of abdomen ultrasonography were normal. The planned anti-parietal cell antibodies, anti-intrinsic factor antibodies, gastroscopy could not be performed for social security reasons. Bone marrow aspiration smear (Figure 2) indicated a significant increase in the erythroid series (Erytroid/Myeloid series: 6-7/1).

Megaloblastic view in erythroid and granulocytic series has been observed (giant stabler, nucleocytoplasmic dissociation). Atypical cell has not been seen and other cell lines were normal. It was considered that pancytopenia developed and deepened due to vitamin B12 deficiency related megaloblastic anemia accompanying with erythrocyte antibodies and autoimmune hemolytic anemia. Erythroid hyperplasia and megaloblastic view in the bone marrow aspiration confirmed this thought.

Vitamin B12 supplementation (1000 mcg/day, intramuscularly) was initiated and planned for a lifetime of months after starting treatment protocol, in addition to folic acid (5 mg/day per oral) and methyl prednisolone (1 mg/kg/day, per oral) that was administered for three months.

Hemolysis, other laboratory and clinical findings recovered approximately 15 days after, and CBC and other blood cell series recovered after one month. Blood values remained normal at follow-up.

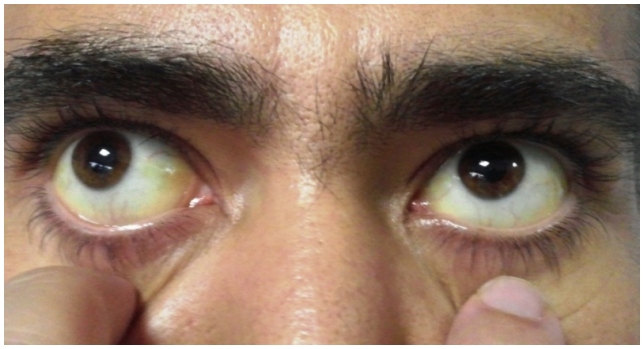

Figure 1: Skin and sclera jaundice of patient.

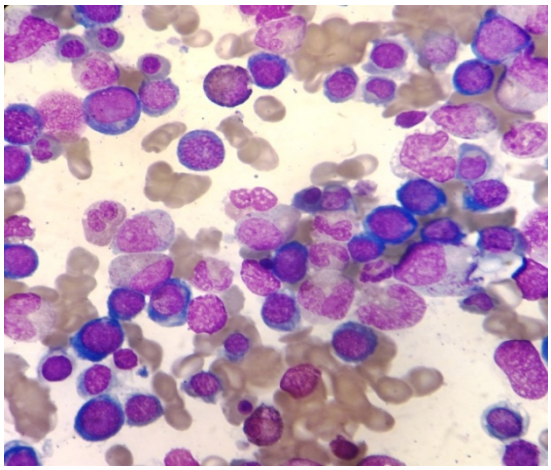

Figure 2: Megaloblastic changes in the bone marrow (Giemsa, x100).

Discussion

Vitamin B12 (cobalamin) deficiency is the most common cause of macrocytic anemia and diagnosed by typically red blood cell indicators and detecting decrease in blood levels of vitamin B12. But some studies reported that 50% of patients presented with subclinical symptoms or normal vitamin B12 levels, so serum methylmalonic acid and homocysteine measurement or parietal cells and intrinsic factor antibody measurement are helpful for diagnosis in such cases. Treatment is parenteral vitamin B12 supplementation, if absorption is presence (such as pernicious anemia or ileal disease), otherwise oral supplementation of vitamin B12 is suitable [3]. In 10% of patients with vitamin B12 deficiency may develop more severe clinical and laboratory findings of pancytopenia. These include pancytopenia, severe anemia (hemoglobin <6 g/dL), or coombs negative hemolytic anemia, and pseudo thrombotic microangiopathy. Pancytopenia is only one reason of etiology of vitamin B12 deficiency. Vit B12 deficiency is a cause of pernicious anemia that is an autoimmune disease that may be relationship between other autoimmune diseases. A study has been reported that autoimmune cytopenia was diagnosed in four cases with pernicious anemia and also this relation should be considered in differential diagnosis of pancytopenia [4-6]. At the same time with pernicious anemia or immune thrombocytopenia recently drawn attention can sometimes be associated with autoimmune hemolytic anemia. It was reported that in case of anemia that does not respond to treatment, autoimmune hemolytic anemia should be taken into consideration and could be diagnosed with Coombs tests. Treatment is corticosteroid therapy, therapeutic splenectomy in case who failed to respond to treatment. It has been often noted that most of cases are female [6]. During our tests investigating pancytopenia in case presented above, we diagnosed coombs positive hemolytic anemia and vitamin B12 deficiency as well as hemolysis accompanying with deep anemia. Autoimmune tests including ANA, anti-DNA, RF were negative. Case responded to steroid treatment and vitamin B12. Although our case has not been examined exactly due to social security problems, he recovered completely.

Two different cases were reported in the literature similar to our case. First of them is 55-year-old woman who was diagnosed with megaloblastic anemia and did not respond to vitamin B12 and folic acid treatment within two weeks. Autoimmune hemolytic anemia (AHA) has been diagnosed as well and then corticosteroid has been initiated. Case responded to therapy [7]. In other case, neurologic symptoms appeared whilst case with AHA was being treated [8]. Vitamin B12 deficiency related megaloblastic anemia had been overlooked and after appropriate treatment had been administered clinical symptoms recovered. Both clinical cases should be kept in mind because AHA and vitamin B12 deficiency related megaloblastic anemia could be seen rarely [8].

Consequently, vitamin B12 deficiency is rarely accompanying with autoimmune cytopenias, such as AHA that is more common in women. If case is not investigated exactly, diagnosis may be overlooked. In some subclinical autoimmune cytopenia, anemia which does not respond to cobalamin treatment or deepens should be treated with corticosteroid therapy; in case that does not respond, splenectomy is indicated.

Conflict of Interest

There is no conflict of interest.

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Author Contributions

- Analysed the data: Osman Yokuş, Habip Gedik
- Wrote the first draft of the manuscript: Osman Yokuş, Habip Gedik
- Contributed to the writing of the manuscript: Osman Yokuş, Habip Gedik
- Agree with manuscript results and conclusions: Osman Yokuş, Habip Gedik
- Jointly developed the structure and arguments for the paper: Osman Yokuş, Habip Gedik
- Made critical revisions and approved final version: Osman Yokuş, Habip Gedik
- All authors reviewed and approved of the final manuscript.

Disclosures and Ethics

As a requirement of publication author(s) have provided to the publisher signed confirmation of compliance with legal and ethical obligations including but not limited to the following: authorship and contributorship, conflicts of interest, privacy and confidentiality and (where applicable) protection of human and animal research subjects. The authors have read and confirmed their agreement with the ICMJE authorship and conflict of interest criteria. The authors have also confirmed that this article is unique and not under consideration or published in any other publication, and that they have permission from rights holders to reproduce any copyrighted material. Any disclosures are made in this section. The external blind peer reviewers report no conflicts of interest.

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