PANCYTOPENIA AND HEMOLYSIS SECONDARY TO PERNICIOUS ANEMIA

Diogo Costa Santos, Graça Lérias and Isabel Madruga

Department of Medicine, Hospital Egas Moniz, Portugal

ABSTRACT Cobalamin deficiency is a common cause of anaemia, frequently presenting with an insidious onset of manifestations. Pancytopenia and hemolysis are rarely described in the literature. We report a case of a 73-year-old woman presenting with fatigue, anorexia and significant weight loss, found to have megaloblastic anaemia in association with pancytopenia and hemolysis. Work-up revealed vitamin B12 deficiency secondary to pernicious anaemia caused by atrophic gastritis.

KEYWORDS Pernicious anaemia, vitamin B12 deficiency, pancytopenia, hemolysis

Learning points
Vitamin B12 deficiency often presents with an insidious onset. Pancytopenia and hemolysis are rarely described in association with pernicious anaemia but reversible with proper treatment. Investigation of pancytopenia, hemolysis and significant weight loss can be both unnecessarily invasive and costly.

Introduction
Vitamin B12 deficiency is a frequent cause of megaloblastic anaemia in elderly patients, often presenting with an insidious onset of hematologic and neurological manifestations, usually reversible if properly identified and treated[1]. Pernicious anaemia can result in anorexia with significant weight loss while pancytopenia and hemolysis are rarely described in the literature. [2]

Case report
A 73 year-old-woman with a medical history of hypertension was admitted to the hospital for progressive fatigue, anorexia and a 20 Kg weight-loss over the previous 5 months, having become unable to leave her apartment and perform her daily activities. She also began suffering from nausea with intermittent postprandial vomiting 2 months prior to admission and constipation and paresthesias of lower-limb extremities more recently. Physical examination revealed fever (38,5°C), pale skin and subconjunctival pallor. There were no palpable lymph nodes, abdominal masses or organomegaly. Complete blood count on admission revealed pancytopenia - megaloblastic anaemia, with a haemoglobin 6,8 g/dL, mean corpuscular volume 124 fL, mean corpuscular haemoglobin 41.2 pg, leukocytes 2,2x10⁹/L and platelets 55x10⁹/L and blood smear revealed important anisopoikilocytosis and mild macrocytosis and polychromatophilia. Additional laboratory results uncovered total bilirubin 2,56 mg/dL with a direct bilirubin 0,78 mg/dL, elevated LDH 1721 U/L, hyperhomocysteinemia 56.9 pmol/L, haptoglobin <10 mg/dl and a negative direct and indirect Coombs test. Vitamin B12 was then measured and found to be below reference values <36.9 pmol/L. At the same time, folic acid and iron dosage were within normal values, prompting gastric parietal cell and intrinsic factor antibodies testing, both positive. An endoscopic exam was performed with a biopsy revealing extensive atrophic gastritis. Anaemia was treated with blood transfusion, and intramuscular vitamin B12 replacement was initiated. The patient began progressively improving, becoming apyretic and regaining appetite, while fatigue, paresthesias and thrombocytopenia quickly resolved after a few vitamins B12 administrations. The patient was discharged while still maintaining anaemia Hb 8,6 g/dL and leukopenia 2,2x10⁹/L, under monthly intramuscular vitamin B12 replacement. During follow-up, the patient continued to improve, eventually becoming asymptomatic, regaining her previous weight and autonomy and with a normal complete blood count.
Discussion

Vitamin B12 is typically derived from animal sources such as meat, liver and dairy products. It is necessary for the formation of hematopoietic cells, and its deficiency causes megaloblastic anemia. [1]

Pernicious anemia is a disease of autoimmune origin which results in antibodies destroying gastric parietal cells and/or intrinsic factor, interfering with vitamin B12 absorption and causing anemia and neurological manifestations of insidious onset. Approximately 10% of cobalamin deficiency patients have potential life-threatening haematological manifestations, with rare occurrences of symptomatic pancytopenia (5%) and hemolytic anemia (1.5%). [2] Few reports of pernicious anemia presenting with pancytopenia and hemolysis been reported in the literature. [3]

Pancytopenia occurs in severe vitamin B12 deficiency that is sustained over time. The mechanism of cytopenias is defective DNA synthesis. While all hematopoietic cell lines are compromised, the effect on erythrocytes is greatest. However, only rarely does thrombocytopenia and leukopenia cause clinical problems. [4] Our patient-reported considerable weight loss, causing initial concern that a neoplasm could be involved, especially since pancytopenia and significant fatigue were also present.

Hemolysis presents with elevated LDH, low haptoglobin, and elevated indirect bilirubin, mostly due to ineffective erythropoiesis and intramedullary destruction. [5] However, the presence of autoimmune hemolytic anemia with a positive antiglobulin test is not a common finding among pernicious anemia patients. [6]

Although pernicious anemia presenting with pancytopenia and hemolysis is rare, it is reversible with proper treatment. Clinicians should retain a high level of suspicion since a careful and systematic approach to diagnosing such patients may prevent them from undergoing invasive and costly procedures.

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Conflict of interest

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References


