

## Megaloblastic anemia in a patient treating with metformin: A rare case report

Z. Nikousefat<sup>1</sup>, M. Javdani<sup>1</sup>, F. Abasabadi<sup>2,\*</sup>,

<sup>1</sup>Department of Clinical Sciences, School of Veterinary Medicine, Razi University, Kermanshah, Iran

<sup>2</sup>School of Veterinary Medicine, Razi University, Kermanshah, Iran

**Background and Aims:** Metformin has been used extensively in treating diabetes and become promising in prognosis by improving insulin sensitivity and protection against vascular complication. However, drug side effects including gastrointestinal complications and lactic acidosis have been reported in review articles, but associated vitamin B12 deficiency and its related disorders is less known. In this study, a rare case of megaloblastic anemia caused by metformin in routine dosage will be described.

**Methods:** A diabetic patient had been taking metformin for 4 years, referred to laboratory for following up. Hemoglobin levels, RBC indices, Schiling test, vitamin B12 and folate levels and bone marrow FNA were worked up with routine methods.

**Results:** Results showed hemoglobin =8.4 gr/dl, MCV=108 fl, MCH=36 pg, serum B12 level 70 pgr/ml. Serum folate was within normal ranges. Upper GI endoscopy and small bowel enema was normal. Schiling test showed intestinal malabsorption. A bone marrow aspirate showed highly cellular pattern with all three cell lines present. The red and white cells found in megaloblastic form. The hematological abnormalities resolved on stopping the metformin and replacing vitamin B12.

**Conclusions:** Evidence from early clinical observation indicated a prevalence of %30 for vitamin B12 malabsorption among patients undergoing long-term metformin treatment. Subsequent studied reported that metformin decrease serum vitamin B12 level by 14 to 30%. recent evidence has demonstrated that metformin administration neither alters intestinal motility nor causes bacterial overgrowth. B12 intrinsic factor complex is calcium dependent impaired by metformin interaction which result in vitamin B12 deficiency. Although adverse reaction can be reversed by administering calcium, but following megaloblastic anemia occurs rarely. It seems after routine screening considered for vitamin B12 deficiency, optimum management for patients should be performed to reduce probability of meglablastic anemia. Pragmatic approach is to continue with metformin and replacing Vitamin B12 with hydroxycobalamin.

**Keywords:** Metformin; Diabetes; Megaloblastic anemia