Retrospective Study of Serum LDH in Megaloblastic Anemia

Keywords: Megaloblastic anemia, LDH, MCV

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Abstract
Megaloblastic anemia is characterized by increased levels of hyperbilirubinemia, increased mean corpuscular volume (MCV) ≥ 100 fl. Intracellular heme formation is markedly increased in patients with megaloblastic anemia due to increased intracellular activities of bilirubin and biliverdine. Anemia levels are significantly elevated in patients of megaloblastic anemia. Serum LDH levels are significantly elevated in patients of megaloblastic anemia. Thus serum LDH level may serve as a parameter in diagnosis of megaloblastic anemia.

Introduction: Megaloblastic anemia is characterized by decreased level of hemoglobin with macrocytosis and mean corpuscular volume (MCV) ≥ 100 fl. Intracellular heme formation is markedly increased in patients with megaloblastic anemia due to increased intracellular activities of bilirubin and biliverdine. Anemia levels are significantly elevated in patients of megaloblastic anemia. Serum LDH levels are significantly elevated in patients of megaloblastic anemia. Thus serum LDH level may serve as a parameter in diagnosis of megaloblastic anemia.

Aims and Objectives: To study level of LDH in lactate dehydrogenase in cases of megaloblastic anemia.

Material and methods: This is a retrospective observational study. The study was conducted in patients admitted to Smt. Khashibai Navale Medical College & General Hospital, Pune during the period of 1 July 2013 to 10 December 2014. The medical records of 340 patients of megaloblastic anemia were reviewed and 42 cases of megaloblastic anemia were selected for study. Patients diagnosed as megaloblastic anemia with Hb ≤ 9 g/dL, MCV ≥ 100 fl whose serum LDH level was measured were selected for the study. All biochemical tests were done on automated biochemistry analyzer. Serum LDH estimation was estimated by automated biochemistry analyzer.

Discussion: Megaloblastic anemia is important public health problem. Megaloblastic anemia is characterized by macrocytosis, anisocytosis, and poikilocytosis. MCV in megaloblastic anemia is ≥ 100 fl. Important causes of megaloblastic anemia are deficiency of vitamin B12 or folic acid or abnormalities of their metabolism. These vitamins are important for synthesis of DNA & RNA. Deficiency of these vitamins affects nucleic acid synthesis & leads to ineffective erythropoiesis i.e. intra medullary hemolysis, which occurs rise of serum bilirubin & various enzymes including serum LDH. LDH is a marker of tissue breakdown & it is abundantly present in RBCs. As a result of lysis of RBCs, LDH is released into circulation. This rise of serum LDH often corresponds to a marker of tissue breakdown i.e. heme formation. Study of serum LDH in megaloblastic anemia is demonstrated by many authors in their respective studies. High serum LDH level is believed to be useful tool for diagnosis of megaloblastic anemia. This study was designed to study the level of serum LDH in megaloblastic anemia, thus an effort to find usefulness of serum LDH level for diagnosis of megaloblastic anemia.

Results: Out of total 42 patients included in the study, 18 were males & 24 were females. M:F ratio was 11:33. The mean age of the patients was 35.12 years with a standard deviation of ± 17.81. The age range was 13–78 years. The mean hemoglobin in the study population was 5.94 ± 7.1. The minimum Hb level was 2.5 g/dL & maximum was 10 g/dL. The mean MCV was 115 fl; the maximum being 139 fl. Serum LDH was elevated in 36 patients (90%). The maximum value of serum LDH in this study group was 4870 IU/L. The average serum LDH level was 2386 IU/L, which is more than 5 times the upper limit of serum LDH in our labs. Similar findings were noted by C. F. McCARTHY & EVA2-ZIAPE. T. S. JASWAL & others in their study pointed out that high serum LDH is present in megaloblastic anemia & level ≥ 3000 could be used for diagnosis of megaloblastic anemia.

Conclusion: In this study, serum LDH level was significantly elevated in patients of megaloblastic anemia. Thus serum LDH level may have an important role in diagnosis of megaloblastic anemia.

Reference