

Unexpected high levels of Cobalamin (Vitamin B12): Numerous interferences are decreased by PEG treatment.

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Introduction

Cobalamin (Vitamin B12) deficiency is a common cause of anemia. High levels of serum cobalamin is mainly due to cobalamin supplementation. It has also been associated with hematological malignancies, liver or renal diseases. Cobalamin is sometimes found elevated in autoimmune disorders and infectious diseases but concerns are raised on the fact that those serum increases might be due to interference with immunoassays.

Material and method

In this study, we have systematically treated serum harboring cobalamin values > 1000 ng/L with polyethyleneglycol (PEG 6000 20%) for 1h at 37°C. Assays were conducted on Roche Cobas C6000.

Results

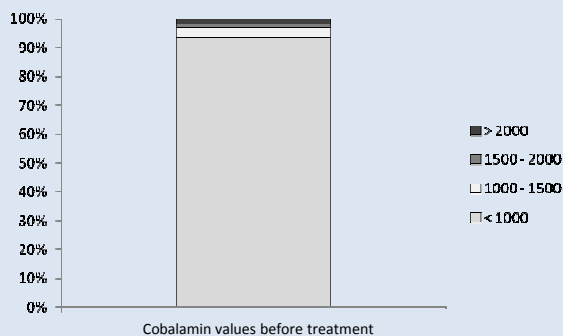


Fig. 1: Serum with cobalamin > 1000 ng/L represents 6.5% of the prescribed cobalamin dosage.

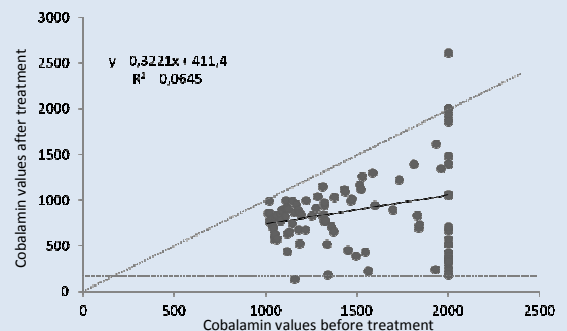


Fig. 2: Cobalamin values before treatment poorly correlates with cobalamin values after PEG treatment. Hence, only 10% of the serums face less than 10% decrease in cobalamin level after PEG treatment.

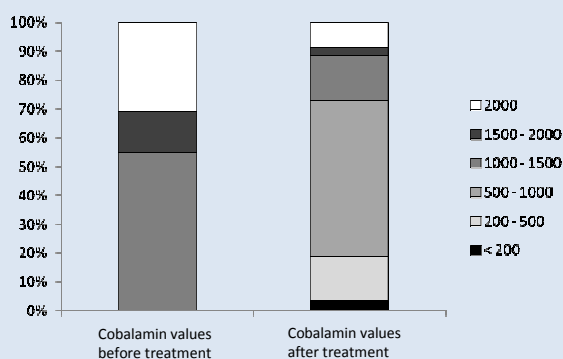


Fig. 3: 3% of >1000 ng/L cobalamin serums were actually defined as cobalamin deficient (< 200 ng/L) after PEG treatment. This number increases up to 18% when including the < 500 ng/L serums after PEG treatment.

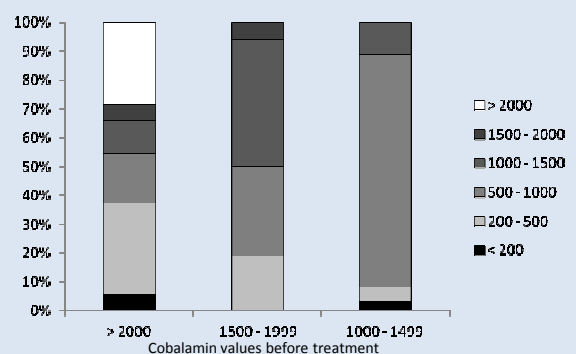


Fig. 4: Only 8% of the 1000 - 1500 ng/L cobalamin serums harbor a values < 500ng/l after PEG treatment whereas this values goes up to 37% for the >2000 ng/L cobalamin serums.

Conclusions

Those data's shed the lights on the high prevalence of interference in patients with unexpected high cobalamin level. Precipitation with PEG appears to be an easy and costless method to increase the reliability of cobalamin dosage. In accordance with our results, we recommend to treat systematically every serum with a cobalamin >1500 ng/L.