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Utility of serum ferritin levels as an acute phase reactant and serum albumin to differentiate thyroiditis and Graves' disease

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Background and Objectives: While both Graves and thyroiditis leads to thyrotoxicosis, differentiating them is a priority as treatment is grossly different. Nuclear scan or TSH receptor antibody is the confirmatory test for the same. Available studies suggest serum CRP, eosinophil/monocyte, free T3/free T4 ratio values prove doubtful in differentiating between two types of thyrotoxicosis. The study aims to find out whether serum ferritin levels could differentiate thyroiditis from Graves.

Materials and Methods: Thyrotoxic patients who attended the Medicine OPD of PIMS were included in the study. Data was collected from 42 thyrotoxic patients who attended the OPD which gave the study a confidence level of 99% and confidence interval of 5%, assuming 60% prevalence of thyrotoxicosis. Non random sampling was done. Considering inclusion and exclusion criteria required sample was recruited. Inclusion criteria included all patients with a diagnosis of thyrotoxicosis attending OPD. Exclusion criteria were patients with anemia, renal failure, receiving blood transfusions, chronic liver disease Connective tissue disorders, Chronic infection, Inflammatory states, Toxic adenoma /Toxic MNG (based on uptake scan). After obtaining written informed consent from patient, required details and investigations were recorded. Patient's FT3, FT4, TSH, TC, DC, ESR, Ferritin, Albumin were recorded. Uptake scan was done to diagnose Graves' disease, thyroiditis. Mann-Whitney U test was used to find the difference between median ferritin levels of graves and thyroiditis. Sensitivity, specificity and predictive values along with ROC curve was drawn using ferritin values considering nuclear uptake scan as the gold standard.

Results: Out of the 34 patients studied, 21 patients havesubacute thyroiditis, 10 had Graves, and 3 had toxic MNG. Ferritin levels were significantly high in the SAT group (412.3+/- 42.3 mcg/l) as compared to the Graves group (175.3+/- 42.3 mcg/L) and toxic MNG group (225.7+/- 63.1.mcg/L). A high ferritin level had a sensitivity of 85.1%, specificity of 80.00%, positive predictive value of 90% and negative predictive value of 71.2% in differentiating SAT from Graves' disease

Conclusions: Serum ferritin levels is emerging as a useful laboratory investigation in differentiating thyroiditis from Graves' disease. This simple lab test may replace the more expensive and laborious Technetium scan in differentiating thyroiditis from Graves' disease.