Multiple myeloma masquerading as anomalous TFT

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Introduction : Highly sensitive immunoassays are the most commonly employed tests for the diagnosis of thyroid disorders. Though the sensitivity is high the specificity is affected by various antibody interferences. Such antibody interference lead to the diagnosis of multiple myeloma in our case.

Case presentation : A 52 year old male was referred with a history of weight loss over 10kg in a month associated with excessive sweating. There was mild pallor, tachycardia with no other signs of thyrotoxicosis.Investigations by his primary care physician revealed a TSH : 4.06uIU/ml T4 : 5.42ug/dl T3 : >456ng/dl performed by one step immunoassay with FT3 : 2.93pg/ml FT4 : 1.01ng/dl. He was referred to rule out thyrotoxicosis in view of confusing thyroid function tests and clinical presentation. Considering the causes of euthyroid hyperthyroxinemia, we repeated the TFTs by a different assay method(two-step immunoassay) which revealed a TSH : 1.28uIU/ml T3 : 41.91ng/dl, T4 : 5.82ug/dl FreeT3 : 1.68pg/ml FreeT4 : 0.8ng/dl. His routine investigations were significant for a Hb : 8.3g/dl and globulin : 10.3g/dl. His serum electrophoresis showed IgG kappa monoclonal gammopathy.

Discussion : Thyroid hormone autoantibodies interfere with thyroid hormone assay and can lead to spuriously high or low levels depending on the method of assay employed. The discordant thyroid hormone values in our case by different assay methods implies the presence of interfering antibodies. Though two step immunoassays are considered to be insensitive to interferences, our case reported a spuriously low T3 in this setting. THAABs are usually polyclonal IgG subclass with occasional cases of monoclonality, as in the setting of multiple myeloma. Our case is the first to report a IgG monoclonal antibody binding preferentially to analogue T3. This case highlights the importance of identifying antibody interference as a cause of euthyroid hyperthyroxinemia and hypothyroxinemia.