History
13 year old with thyromegaly, normal TSH and elevated thyroid antibodies.

Diagnosis
Hashimoto Thyroiditis

Discussion
Hashimoto thyroiditis, also known as chronic autoimmune thyroiditis, is autoimmune destruction of the thyroid characterized by goiter, autoimmunity to thyroid antigens, and lymphocyte infiltration. This condition is the most common of all thyroid disorders and affects people of all ages. Hashimoto thyroiditis has a strong genetic component because there is a high prevalence of thyroid antibodies among first-degree relatives.

The pathogenesis of Hashimoto thyroiditis can be summarized as an autoimmune reaction against the thyroid, with both cellular and humoral features. Antithyroglobulin antibodies are present in 55%–90% of patients, whereas thyroid peroxidase antibodies are present in 90%–95%. The autoimmune reaction results in lymphocytic and plasma cell infiltration with formation of lymphoid follicles, which in turn leads to thyroid follicle deterioration. Fibrosis develops over time, resulting in glandular enlargement. As a result of the ongoing replacement of the normal thyroid follicles by lymphocytes and fibrous tissue, there is eventual reduction in thyroid function because thyroid hormone production by the gland is impaired. Therefore, goiter and hypothyroidism are the main clinical features of this disease.

In the early stage of Hashimoto thyroiditis, thyroid function is normal. This is because initially a mild decline in circulating thyroid hormones is sensed by the pituitary gland, and a compensatory rise in TSH secretion stimulates the gland to synthesize more thyroid hormone so that T3 and T4 levels return to normal. Such thyroid stimulation results in elevated radiiodine uptake values. In some instances, thyroid follicles demonstrate a variable response to the chronic TSH stimulation, leading to patchy proliferation of these follicles. Eventually thyroid parenchyma is replaced by fibrous tissue and accounts for the contour deformity and heterogeneous echogenicity.

Findings
US-Thyromegaly with macrolobulated contour, heterogeneous acoustical architecture and hyperemia on color Doppler.

Reference
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