

# Low molecular weight thyroglobulin leading to a goiter in a 12-year-old girl

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We characterized the abnormal thyroglobulin (TG) in the thyroid and serum of a 12-yr-old girl with a large sporadic multinodular goiter first noted at age 4 yr. She developed normally and had no clinical evidence of hypothyroidism. However, her serum T<sub>4</sub> was less than 1.0/μg/dl, T<sub>3</sub> was 125 ng/dl, and TSH was 155 μU/ml. Serum PBI was 9.7 /μg/dl, and more than 90% was not extractable with butanol. The 24-h radioactive iodine uptake was 55%, not dischargeable by perchlorate. Hormone formation was tested by the administration of <sup>131</sup>I before surgery. [<sup>131</sup>I]T<sub>4</sub> and [<sup>131</sup>I]T<sub>3</sub> but not <sup>131</sup>I-labeled iodotyrosines, were present in the thyroidal venous blood. Hydrolysis of 10,000 × g supernatants from three randomly obtained samples of the goiter revealed 66-77% of the <sup>131</sup>I-iodotyrosines, 2-4% as iodothyronines, and 10-12% as undigestible material; the MIT to DIT ratio ranged from 3.1-8.7, and the T<sub>4</sub> to T<sub>3</sub> ratio ranged from 2.3-8.3. The TG level was 2.5 mg/g in the goiter and 9.4 /μg/ml in the serum.