

# Thyroid Nodule Is a Discrete Lesion in the Thyroid Gland

Tim Atkinson\*

Department of Medicine, University College London, Gower Street, London

## Description

Thyroid nodule is a discrete lesion in the thyroid gland that is radiologically distinct from the surrounding thyroid parenchyma. Thyroid nodules are common; their prevalence in the general population is high, the percentages vary depending on the mode of discovery: 2-6% (palpation), 19-35% (ultrasound) and 8-65% (autopsy data). They are discovered either clinically on self-palpation by a patient, or during a physical examination by the clinician or incidentally during a radiologic procedure such as ultrasonography (US) imaging, Computed Tomography (CT) or Magnetic Resonance Imaging (MRI) of the neck, or fluorodeoxyglucose (FDG) positron emission tomography; with the increased use of sensitive imaging techniques, thyroid nodules are being diagnosed incidentally with increasing frequency in the recent years. Though thyroid nodules are common, their clinical significance is mainly related to excluding malignancy, evaluating their functional status and if they cause pressure symptoms. Thyroid nodules can be caused by many disorders: benign (colloid nodule, Hashimoto's thyroiditis, simple or hemorrhagic cyst, follicular adenoma and sub-acute thyroiditis) and malignant Cancer, Anaplastic Cancer, Medullary Cancer, Thyroid Lymphoma and metastases –3 most common primaries are renal, lung & head-neck).

Initial assessment of a patient found to have a thyroid nodule either clinically or incidentally should include a detailed and relevant history plus physical examination. Laboratory tests should begin with measurement of serum Thyroid-Stimulating Hormone (TSH). Thyroid scintigraphy/radionuclide thyroid scan should be performed in patients presenting with a low serum TSH. Thyroid ultrasound should be performed in all those suspected or known to have a nodule to confirm the presence of a nodule, evaluate for additional nodules and cervical lymph nodes and assess for suspicious sonographer features. The next step in the evaluation of a thyroid nodule, if they meet the criteria as discussed later, is a Fine Needle Aspiration (FNA) biopsy. Serum TSH should be measured in all patients with thyroid nodules. In patients with low TSH levels, radionuclide thyroid scan should be performed next to assess the functional status of the nodule. In a patient with a thyroid nodule, an increased serum TSH or TSH even in the upper limit of normal is associated with increased risk and an advanced stage of malignancy.

## Serum calcitonin

In patients with thyroid nodules, the routine assessment of serum calcitonin is controversial and there are no definite recommendations for or against it. Many prospective, non-randomized studies, mostly from outside US have assessed the value of measuring serum calcitonin. The studies which show that use of serum calcitonin for screening may detect C-cell hyperplasia and MTC at an earlier stage and overall survival may be improved, are based on pentagastrin stimulation testing to increase specificity. Pentagastrin is not available in the United States, and there is still an ambiguity about the sensitivity/specificity, threshold cut off values and cost-effectiveness. False-positive calcitonin results may be obtained in patients with hypercalcemia, hypergastrinemia, neuroendocrine tumors, renal insufficiency, papillary and follicular thyroid carcinomas, goiter, chronic autoimmune thyroiditis and prolonged use of certain medications. False negative test result may be seen in rare MTCs that do not secrete calcitonin.

## Serum thyroglobulin

In patients with thyroid nodules, routine measurement of serum thyroglobulin is not recommended as it can be elevated in many thyroid diseases and is neither specific nor sensitive for thyroid cancer. Routine measurement of serum anti-thyroid peroxidase antibodies is not necessary for thyroid nodule evaluation.

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\*Corresponding author: Tim Atkinson, Department of Medicine, University College London, Gower Street, London, E-mail: atkinson@gmail.com

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