TI 1 Thyrotoxicosis

Clinically suspected thyrotoxicosis

Clinical history and physical examination

Biochemical evaluation

Biochemically thyrotoxic

Thyroid scintigraphy

Ultrasound with colour doppler as an alternative to thyroid scintigraphy if ultrasound expertise in this area or if scintigraphy is contraindicated

Ultrasound +/- FNA for cold / hypofunctioning nodule or nodule with suspicious sonographic features

FNA for nodule with suspicious sonographic features

Start appropriate treatment (medical, surgical or radioactive iodine)

Biochemically not thyrotoxic

Order appropriate investigation / other diagnostic workup
REMARKS

1 Biochemical evaluation

1.1 Serum thyroid stimulating hormone (TSH) measurement has the highest sensitivity and specificity in the biochemical evaluation of suspected hyperthyroidism and should be used as an initial screening test. Diagnostic accuracy improves when both a serum TSH and free T4 / total T3 are assessed at the time of the initial evaluation.

1.2 Biochemically thyrotoxic:

1.2.1 Suppressed / undetectable serum TSH
1.2.2 Excess serum free T4 / total T3

1.3 Subclinical hyperthyroidism:

1.3.1 Low serum TSH
1.3.2 Normal serum free T4 / total T3

1.4 Autoantibody tests may be useful to differentiate the causes of hyperthyroidism:

1.4.1 Anti-thyroid peroxidase (anti-TPO) antibody:

1.4.1.1 Elevated in Graves’ disease
1.4.1.2 Low/absent in toxic multinodular goiter and toxic adenoma

1.4.2 Thyroid stimulating immunoglobulin (TSI):

1.4.2.1 Elevated in Graves’ disease

2 Nuclear medicine (thyroid scintigraphy)

2.1 Thyroid scintigraphy facilitates the detection of focal and/or global abnormalities of thyroid gland, correlation of anatomy with function, and detection of aberrant or metastatic functioning thyroid tissue or residual normal tissue after therapy.

2.2 Contraindications of thyroid scintigraphy include pregnancy, lactation / breast feeding, recent iodine exposure.

2.3 Diagnostic accuracy of thyroid scan using Tc-99m pertechnetate is comparable to that using I-123 in patients with hyperthyroidism and is much cheaper and more widely available.

2.4 Thyroid cancer occurs in Graves’ disease with an incidence of about 2%. Thyroid nodules larger than 1-1.5 cm should be evaluated before radioactive iodine (RAI) therapy. If a RAI scan is performed, any non-functioning or hypofunctioning nodules should be evaluated with fine needle aspiration (FNA) because they may be malignant.
3 US

3.1 US can assess the size, texture and vascularity of the thyroid gland and evaluate the sonographic features of non-palpable nodules.

3.2 US guided FNA or biopsy can be performed for nodules with suspicious features.
REFERENCES


