

the past decade, the use of high-resolution sonography has resulted in high rates of detection of thyroid nodules, but characterization of nodules as either benign or malignant remains problematic because of considerable overlap in sonographic features⁽⁴⁾.

Ultrasonography is often the first imaging modality employed to evaluate a thyroid nodule since it is readily accessible, inexpensive, and noninvasive, and it requires no radiation exposure. Ultrasonography is effective at delineating intrathyroidal architecture, distinguishing cystic from solid lesions, determining if a nodule is solitary or part of a multinodular gland, and accurately locating and measuring a nodule⁽⁵⁾. It has the added advantage of demonstrating any associated lymphadenopathy in the para-tracheal region, the most commonly involved lymph node region for metastasis⁽⁶⁾.

The first use of thyroid ultrasonography was more than 30 years ago to differentiate solid and cystic thyroid lesions⁽⁷⁾. Ultrasonography relies on the emission of high-frequency sound waves that are reflected as they pass through tissue of various impedances. The current technology of high-resolution ultra-sonography uses sound frequencies between 7.5 and 14 MHz, allowing visualization of solid or cystic nodules as small as 2 mm. With improvements in technology, high-resolution ultrasonographic equipment has become more affordable and available so that many endocrinologists are now well trained in its applications and use office-based equipment for evaluation of thyroid nodules⁽⁷⁾.

Our aim is determine the accuracy of the diagnosis of solitary thyroid nodule with ultrasonographic findings in comparison with histological finding and to correlate the sonographic ultrasound (US) and color-Doppler (CFD) findings with the results of histopathology of resected nodules to establish:

- 1) The relative importance of US features as risk factors of malignancy; and
- 2) A cost-effective management of thyroid nodules.

Methods

From January 2011 to May 2011, sixty three patients (from 20 to 70 yr old, mean age: 38.2±14.7 year; (males 17 and females 46), with

solitary thyroid nodule were referred from US department in Baghdad Teaching Hospital to Baghdad hospital surgical center for further assessment.

Ultrasound investigations used an ultrasonographic scanner (Philips HD11) equipped with a 7.5-10 MHz linear transducer for morphological studies 4.5-7 MHz for color flow Doppler evaluation. The CFD examinations were performed with biplanar scanning. Examinations were conducted and recorded by two skilled sonographers according to a standard procedure; the amplifier gain was adjusted in each case at a level to block the appearance of random color noise.

The following ultrasound parameters were assessed in all nodules:

- Nodule diameter (maximum diameter as evaluated by sagittal and transverse scans)
- echogenicity (iso-, hyper- or hypoechoic)
- presence/absence of calcification
- lesion margins: well-defined or blurred
- vascular pattern (along the maximum diameter of the nodule:

Type 0, absence of flow signals

Type 1, vascular flow in peripheral position

Type 2, intranodular flow with multiple vascular images.

All cases were confirmed pathologically by FNA, thyroidectomy, or both.

Adequate cytological material was classified as benign (colloid nodules, lymphocytic thyroiditis, cystic goiters), malignant (papillary carcinoma, medullary carcinoma, anaplastic carcinoma) or suspicious (including follicular or Hurthle cell neoplasms). Cases with benign cytology (or repeated inadequate smears) underwent clinical and biochemical control; to rule out overlooked malignancies. All patients with suspicious or malignant cytology underwent surgery

Statistical Analysis: Clinical, ultrasound, cytological and histological findings were separately recorded and blind-processed for statistical evaluation. Comparison of frequency distributions used the χ^2 test. Univariate and multivariate (logistic regression analysis) with 95% confidence interval were calculated to assess the