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The Value of Ultrasound and Color-Doppler Features in the Assessment of Single Solid Thyroid Nodule

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Abstract

Background The use of ultrasound (US) in the assessment of thyroid disease has greatly increased the detection of small thyroid nodules unrecognized at clinical examination.

Objective To determine the accuracy of the diagnosis of the nature of solitary thyroid nodule by ultrasound in comparison with histopathological findings and to correlate the different sonographic and color-Doppler (CFD) findings with the results of histopathology of resected nodules.

Methods The nodule size, echogenicity, presence/absence of calcification, lesion margins and vascular pattern of 63 patients with solitary thyroid nodule referred for US assessment).

Results Twenty four patients (38.1%) had malignant thyroid nodules and 39 patients (61.9%) had benign nodules as confirmed by histopathology. The large nodules show benign histopathological finding more than the small nodules (no significant difference; 56.5% vs. 25.4%, respectively). Histologically-confirmed malignant lesions show hypoechoic appearance and calcification more than benign nodules. The Malignant lesions presented more frequently than did benign nodules as solid hypoechoic appearance and irregular or blurred margins (52.2% *vs.* 47.8%;), and intranodular vascular pattern with calcification (63.3% *vs.* 36.4%) and the sensitivity and specificity by ultrasound in the evaluation of these nodules will be more and have highly diagnostic accuracy (58.3%, 79.49%, 71.5% respectively) in comparison to the former feature (50%, 71.79%, 63.5% respectively).

Conclusion We conclude that the typical appearance of nodules in thyroid carcinoma is irregular hypoechoic mass with internal vascularity and calcifications. Uncommon appearances of carcinoma include hyperechoic texture, intrinsic hypovascularity, and sharp regular contours. Uncommon sonographic features were found to occur more often than expected.

Keywords Thyroid nodule, ultrasound, color Doppler

Introduction

The thyroid gland is an endocrine gland; this means that it manufactures hormones that are released into the bloodstream, which then act as messengers to affect cells and tissues in other parts of the body [(1)] The use of US in the assessment of thyroid disease has greatly increased the detection of small thyroid nodules unrecognized at clinical examination [(2).]

Thyroid nodules are common, but thyroid cancer is rare. Palpable nodules (usually >1.5 cm) are found in approximately 5% of the population. The prevalence of non-palpable nodules is even higher, occurring in an estimated 40% to 50% of the population. In contrast, the American Cancer Society estimated that there were only 19,500 new cases of thyroid cancer in 2001, representing 1.5% of all new cancers [(3)]. During