



SONOGRAPHIC FEATURES OF THYROID NODULES AND ESTIMATED RISK OF MALIGNANCY: A COMMENT

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I found that the publication on "Ultrasound (US) Features and Estimated Risk of Malignancy in Thyroid Nodules" is very interesting indicated that US has become an indispensable tool in the evaluation and risk assessment of thyroid nodules, certain high-risk features merit more workup than others.^[1]

Doubi, et al stated that "There is a great deal of uncertainty over the ultrasound diagnostic efficacy and there are now risk factors for thyroid nodules, which has an impact on clinical practice and recommendations".^[1]

The most prevalent endocrine abnormalities in the Middle East and in the Kingdom of Saudi Arabia (KSA) are thyroid gland diseases.^[2,3]

Thyroid cancer was the cause of almost 11% of all newly diagnosed cancers in females in KSA in 2008, and up from 6.1% of all newly diagnosed cancers in 2004.^[4]

Doubi, et al. noted that "For each patient, every parameter on the US report was compared to FNA result or their final histopathology and the parameter mostly associated with a malignant final result was studied. Patients with neither fine needle aspiration (FNA) cytology nor final pathology were excluded". In addition to that; one meta-analysis^[5], demonstrated that US characteristics alone did not offer trustworthy information to choose nodules that should have an FNA. As a result, a combination of US features with greater likelihood ratios and, as a result, higher posttest probabilities of malignancy would likely identify nodules with a higher risk for malignancy.

In addition to that they highlighted that "The diagnostic efficacy of sonographic features used to foretell the malignant potential of thyroid nodules is still quite dubious, nevertheless. Individual US characteristics may not be reliable indicators of thyroid cancer, according to low to intermediate quality research".^[1] Based on the results of FNA cytology, the univariate analysis revealed that having a spongiform composition was strongly related with malignancy ($P = 0.04$).

Also, all patients with a suspected thyroid nodule should undergo an ultrasound, according to the most recent thyroid guidelines.

However, there is still some debate over the diagnostic accuracy of sonographic features used to predict the malignant potential of thyroid nodules.^[1] I would like to share ideas on this important issue on US risk features in thyroid nodules.

There are other recent reports on this issue worldwide; one report stated that "The 2015 American Thyroid Association Management Guidelines for Adult Patients with Thyroid Nodules and Differentiated Thyroid Cancer", as reported by Haugen BR, et al.^[6] explain the parameters sought in US reports of thyroid nodules and include the following: Constituents: mostly cystic, mainly solid, solid, or spongiform. There are three types of echogenicity: iso-hyperechogenicity, hyperechogenicity, or marked hyperechogenicity; homogeneous or heterogeneous echostructure; and three types of margins: well-circumscribed, microlobulated, and irregular margins.

Calcification criteria include none, macrocalcification, microcalcifications, mixed calcifications, and hyperechoic calcified spot, hypervascular, shape can be either wider than tall or taller, the presence of rim calcifications.

While data based on FNA cytology results, the multivariate logistic

regression analysis revealed that having a hypoechogenic/ marked hypoechogenic echogenicity, a microlobulated or irregular margin, a hypervascular or penetrating vessel vascularization, a positive halo sign, and a complete fine halo sign were risk factors of thyroid nodule malignancy.^[1]

Li et al^[7], also examined the results of the FNA cytology, came to the conclusion that certain sonographic features had a statistically significant correlation with thyroid cancer. These features included nodule composition (solid portion 50%, $P = 0.000$), eccentric solid portion, irregular nodule shape, microcalcification, and intranodular vascularity.

Other studies^[8,9] looked at the pathological and sonographic data discovered that malignant nodules more frequently had solid structures, infiltrative edges, hypoechoic appearances, and microcalcifications ($P 0.01$) with anteroposterior and transversal dimensions of 1. Others had US characteristics such as solid component, hyperechogenicity, pronounced hyperechogenicity, microlobulated or irregular edges, microcalcifications, and a taller-than-wide shape that demonstrated a significant correlation with malignancy.

Malignancy was indicated in high percentage of the people who took part in their study and their nodules showed hypoechoic and irregular outlines, as Doubi., et al. [1] reported that "In this study, however, the multivariate logistic regression analysis showed that only having hypoechogenicity and a microlobulated or irregular margin were risk factors of malignancy of the thyroid nodules based on final histopathology".^[1]

According to an earlier data from literature^[10], similarly found that "solid nodules and an uneven border were substantially related with malignancy".

In KSA, many studies reported that prevalence of thyroid nodules was most frequent in female than male with benign sonographic features, as another study^[11], revealed that "Out of 1353 cases, 1138 (84.1%) were female and 215 (15.9%) were male. Most of the thyroid lesions were benign (72.5%) of the study sample", also, stated that "Patients younger than 20 or older than 60 years were related with the least likelihood of developing benign or malignant thyroid lesions, while the age range of 21–60 years in both females and males was associated with the highest risk of thyroid lesions development". Additionally, several studies^[12,13], have found no conclusive link between being older as a standalone factor and the emergence of thyroid cancer. There is no single factor of sonographic features suggested the presence of malignancy in thyroid nodules worldwide.

Furthermore, different regions of Saudi Arabia were examined to determine the pattern of thyroid abnormalities. For instance, benign nodules of the thyroid were the most prevalent thyroid condition in the Western region according to sonographic examinations and FNA results, while papillary carcinoma was the most prevalent neoplastic condition.^[14]

A study using several US Thyroid Imaging Reporting and Data Systems (TIRADS) came to the same conclusion as the ones presented here; "Finding that considerable hypoechogenicity was the most significant independent predictor for malignancy ($P 0.05$)".^[15], while others found a significant connection ($P 0.01$) between papillary cancer and the central echogenic region finding.^[16], while Ycaza et al. discovered that the presence of nodular calcifications was the serious

predictor of thyroid malignancy.^[17]

In light of all of these data, Rosário and Purisch proposed that in situations where the nodule indicates initial benign cytology, US features rather than nodule growth should be chosen as a criterion for repeat FNA.^[18] This is relevant since it was discovered that in nodules with insufficient cytology, the rate of malignancy was considerably higher in nodules with worrisome US features than in nodules without any suspicious US features (P0.001).^[19]

Finally, US has now become a crucial tool in the evaluation of thyroid nodule and the risk assessment, certain high-risk features should be given greater attention than others; the presence of a hypoechogenic nodule and the most suggestive features were a microlobulated or uneven border. We think additional studies are required to enable standardization of high-risk US characteristics.^[1]

CONCLUSION:

Certain high-risk traits need more workup than others when evaluating thyroid nodules with ultrasound, which has become an essential tool in this process. In this investigation, it was discovered that the two characteristics most predictive of a malignant ultimate pathology were a hypoechogenic nodule and a micro lobulated or uneven border. The effective therapy of thyroid nodules with microlobulated or irregular margins and hypoechogenic echogenicity must be continuously monitored regarding their risk criteria.

Conflict Of Interest

The author stated that the current study was conducted without any conflicts of interest.

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Author Contributions

As a single author I wrote the hole article, revised, read and approved the final version.

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