CLINICAL CASE

THYROID ULTRASOUND PERFORMED FIRST HAND BY THE ENT SURGEON

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ABSTRACT

The next level in thyroid disease management is the use of first hand surgeon performed sonography. Given the fact that many of the cases with thyroid carcinoma are referred to Ear Nose and Throat (ENT) departments, this diagnostic imaging modality should be available on site. We present a case series with thyroid pathology that benefited from sonography performed first hand by the ENT surgeon in a tertiary teaching hospital. Thyroid pathology is varied from benign cysts to papillary and medullar carcinomas. Further data are necessary for establishing the learning curve for this exam used by ENT surgeons. The foreseeable advantages are faster protocol in oncology cases, cost efficiency and wide scale availability of thyroid ultrasonography.

KEYWORDS: *thyroid pathology, thyroid ultrasound, ENT surgeon*

INTRODUCTION

Thyroid pathology presents an increasing trend in prevalence and incidence worldwide. Sonography represents the first diagnostic imaging tool in the differential diagnosis of thyroid masses. Unfortunately, the pathology of the thyroid gland ranges from benign autoimmune thyroiditis to undifferentiated anaplastic carcinomas. Facing these problems healthcare systems must improve services and expedite diagnosis and treatment. One possible solution to these menacing aspects could be the implementation of thyroid ultrasonography performed first hand by the Ear, Nose and Throat (ENT) surgeon. Backing this endeavor is the fact that actually many of the cases with thyroid masses are submitted to surgery in ENT and Head and Neck Surgery (HNS) departments and thus reduce the time lost with acquiring imaging studies in other departments [1]-[5].

CASE PRESENTATION

Ultrasound protocol

The ENT surgeon possesses in-depth knowledge of thyroid gland anatomy and neighboring structures. A complete ultrasound exam of the thyroid gland must follow the steps: 1) measurements of at least 2 diameters in 2 different planes of the thyroid lobes; 2) measurement of thyroid isthmus thickness; 3) documenting the possible pathology using classic ultrasound criteria – echogenicity, contour, calcifications, etc.; 4) imaging assessment of neck lymph nodes; 5) Doppler signal assessment plus elastography analysis when available. The average ultrasound learning curve for ENT surgeons is reduced to 30 days and a minimum of 50 thyroid ultrasound exams.

Clinical Case Series

We present ultrasound imaging findings in cases with thyroid pathology submitted to

ENT Department at Bucharest University Emergency Hospital. We used a portable bedside Sonoscape S2 ultrasound machine equipped with a linear probe with variable working frequency.
The most frequent pathology encountered is thyroid cysts (Figure 1). These could be true benign cysts or appear during the evolution of colloid deposits, hemorrhage or necrotic transformation of nodules [6], [7].

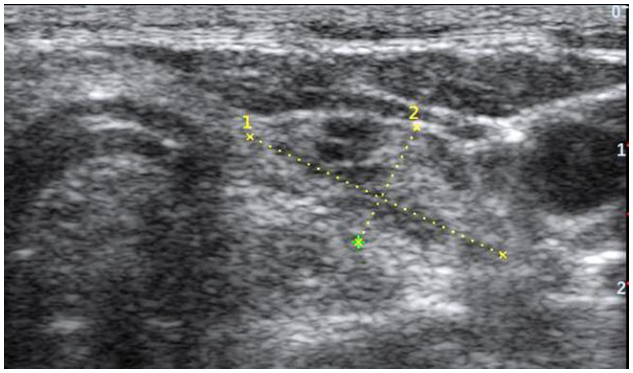

Figure 1 – Thyroid cysts developing inside a nodule

Another interesting finding is calcifications inside the thyroid parenchyma (Figure 2). These usually evolve in long lasting solitary nodules and are identified with the help of the ultrasound back shadow effect [8], [9].

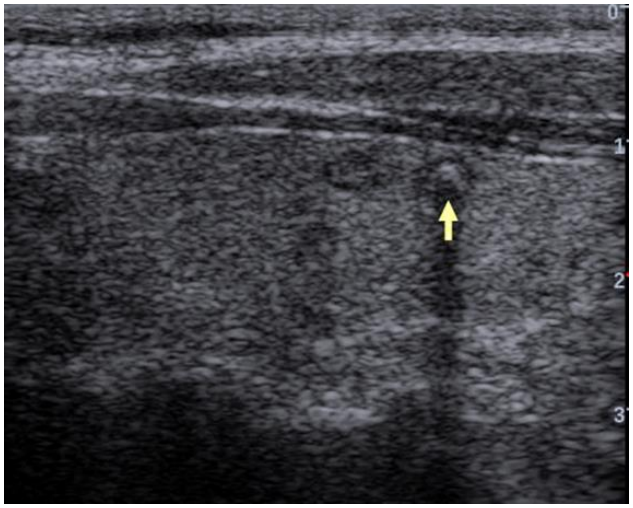

Figure 2 – Thyroid calcifications – arrow shows the back-shadow effect

The nodules (Figure 3) are more likely to be benign if they meet the following criteria: mostly cystic in nature, presence of comet tail effect, hyperechoic nodules, oval in shape, sharp hypoechoic contour, Doppler signal mostly in the periphery [10], [11].

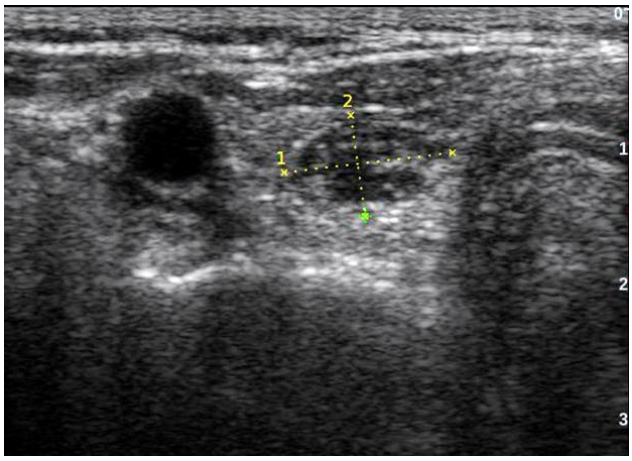

Figure 3 – Benign nodule

For a TIRADS 5 (Thyroid imaging reporting and data system) nodule (Figure 4) with more than 80% chance of malignancy should be considered the following aspects: hypoechoic structure, uneven borders, micro calcifications, rounder than oval in shape, Doppler signal inside the nodule [12], [13].

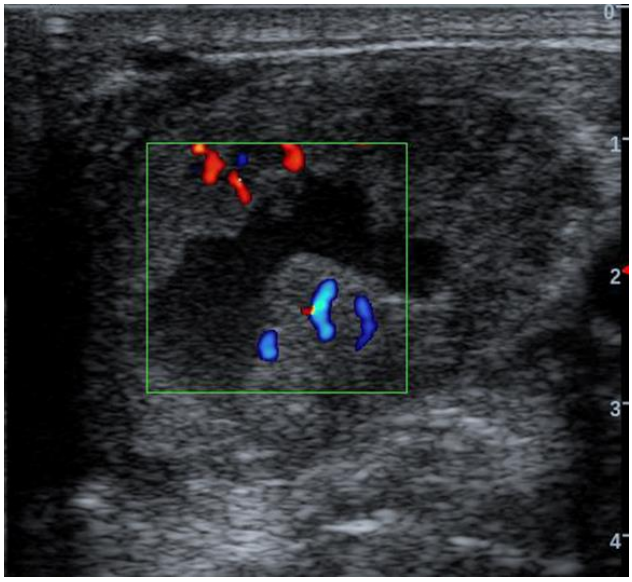

Figure 4 – Thyroid carcinoma – neoformation vessels inside the tumor

In cases with pathology affecting the isthmus (Figure 5) the most probable course of treatment implies total thyroidectomy [14]-[16].

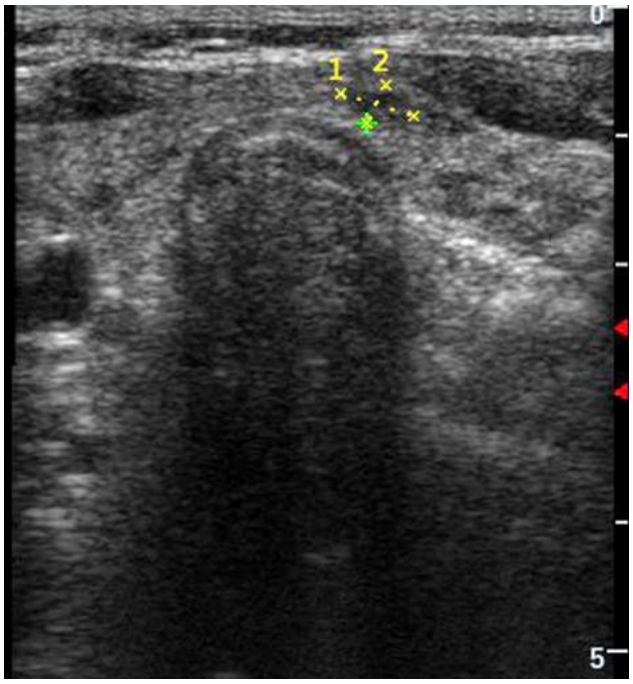

Figure 5 – Cyst at the level of the isthmus in a goiter patient

Another detail is the mass effect (Figure 6) of giant thyroid goiters over the main arterio-venous bundle of the neck along with possible lymph nodes involvement [17].

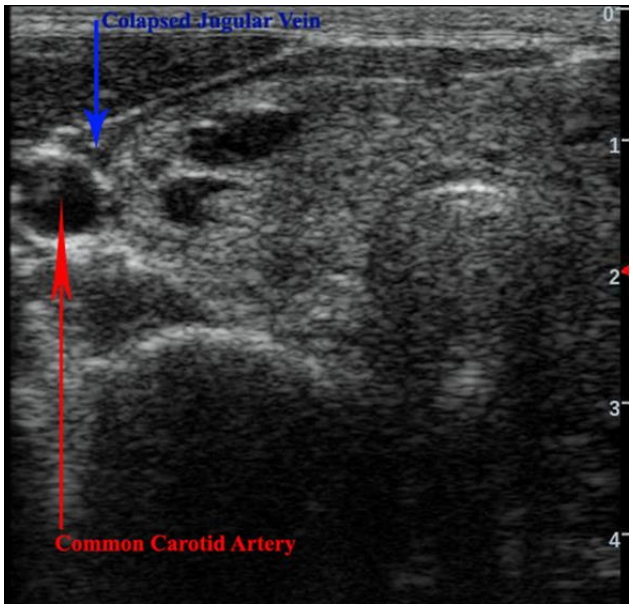

Figure 6 – Displacement of the carotid and jugular vessels at thyroid level

DISCUSSIONS

Ultrasonography has some clear advantages: fast procedure, lack of irradiation and wide scale availability nowadays. Thyroid sonography presents sensibility and specificity higher than 90% for differentiating benign from malignant pathology. This may be achieved by combining sonography criteria with the pathology results obtained through ultrasound guided fine needle aspiration biopsy. Current training practices in sonography credit ultrasound at the level of the thyroid gland with a reduced learning curve of more than 50 procedures in about 1 month of training [18].

CONCLUSIONS

Thyroid ultrasound performed first hand by the ENT surgeon could be the solution for the increasing number of cases with tumors requiring a fast diagnosis and treatment. Therefore, the management of the patient will be quicker without waiting lists in already crowded imaging departments. Nonetheless the patients' compliance to diagnosis steps and treatment should be increased. Also, the surgeon can directly analyze the extent of the pathology and plan dissection of neighboring anatomy structures.

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