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DIAGNOSTIC VALUE OF THYROID ULTRASONOGRAPHY IN THE COMPLEX EXAMINATION OF THYROIDITIS

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Thyroiditis is a substantial part of thyroid pathology. Sixty-eight patients with thryroiditis were investigated by means of real-time ultrasonography. Echographic data were analyzed according to the following diagnostic subgroups: acute suppurative thyroiditis, silent thyroiditis, subacute thyroiditis, and Hashimoto thyroiditis. Ultrasonography enabled the visualization of local changes in cases with acute inflammation of the thyroid gland and the differentiating the thyroid from the extrathyroid inflammatory processes. The typical diffuse or localized hypoechogenecity was a valuable sonographic feature of a possible subacute or Hashimoto thyroiditis. The relatively rapid normalization of echostructure during glucocorticoid treatment in cases with subacute thyroiditis was a specific ultrasonographic finding, while, however, there were no similar changes in patients with Hashimoto thyroiditis.

Key-words: Thyroiditis, dynamic ultrasonography, echostructure, hypoechogenecity, differentail diagnosis

INTRODUCTION

Thyroiditis represents a substantial part of thyroid pathology. The variety of its clinical manifestation deriving from different etiological agents is a factor which hinders the diagnostic process. The exact diagnosis in most cases is of great importance for the further therapeutic regimen and evolution of disease. The thyroid ultrasonography is a non-invasive method contributing together with other methods to the exact diagnosis (1, 7, 8).

The objective of the present study is to evaluate the significance of thyroid ultrasonography in the diagnosis and differential diagnosis of thyroiditis.

MATERIAL AND METHODS

Object of examination were 68 patients (51 women and 17 men) with mean age of 48,4 years. Based on their final diagnosis these patients were divided into four groups: a) with acute suppurative

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thyroiditis (AST) - 2; b) with subacute thyroiditis (ST) - 17; c) with silent thyroiditis - 1, and d) with Hashimoto thyroiditis (HT) - 48 patients. Diagnosis was based on the clinical examination, the biochemical and hormonal characteristics (covering T_3, T_4, protein-bound iodine [PBI], thyroglobulin, microsomal thyroid antibodies such as TgAb, MsAb), as well as on scintigraphy, fine-needle aspiration biopsy (FNAB), and cytological investigations. Diagnosis was histologically verified after surgical treatment in five cases. The echographic examination was accomplished by sonographic equipment (i. e., "Bruel & Kjar" of type 1849) provided with sector transducer with a frequency of 7,5 MHz.

RESULTS

According to the clinical and biochemical examinations, the patients were divided into three groups: group one - with acute thyroid inflammation; group two - with subacute thyroiditis, and group three - with Hashimoto thyroiditis. Both cases with AST were echographically visualized as a tumour-like formation with unclear borderline, streaky hyperechogenicity around and an anechogenic centre on the background of an unilateral enlargement of the thyroid gland (Fig. 1). Clinical symptoms such as pain, local skin alterations, febrility as well as accelerated erythrocyte sedimentation rate (ESR) underwent regression during the antibiotic treatment. The control sonographic examinations revealed that the liquid part of the tumour-like formations was gradually replaced by hyperechogenic structures. Intraoperatively, a detritus-like mass surrounded by fibrous capsule was established.

In ST patients the echographic examination demonstrated diffuse hypoechogenicity with a "spot-like appearance" along with echographically normal zones (Fig. 2). The bordeline between pathologically altered and unchanged structures was unclear with a hypoechogenic centre and pseudocyst formation. The sagittal diameter of the thyroid gland was enlarged. During the glycocorticoid treatment, control examinations were carried out on the 7th, 30th, and 90th day. Reduction of the

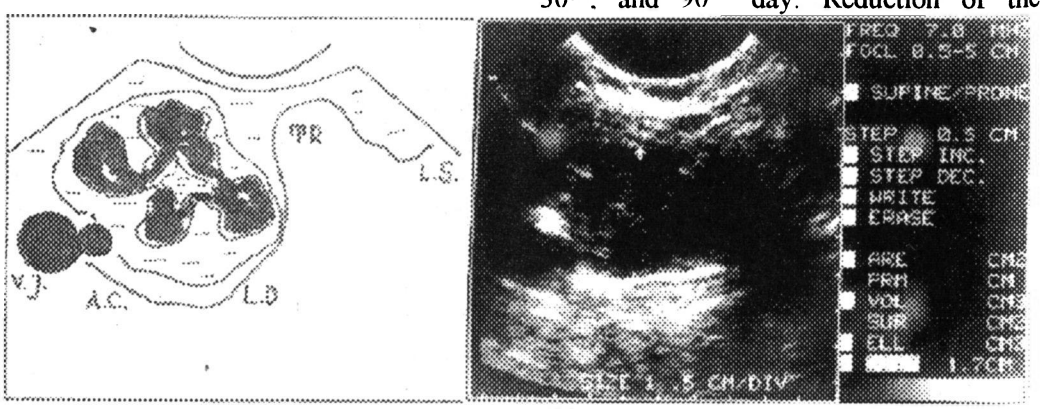

Fig. 1. *Ultrasonographic image in a patient with AST*

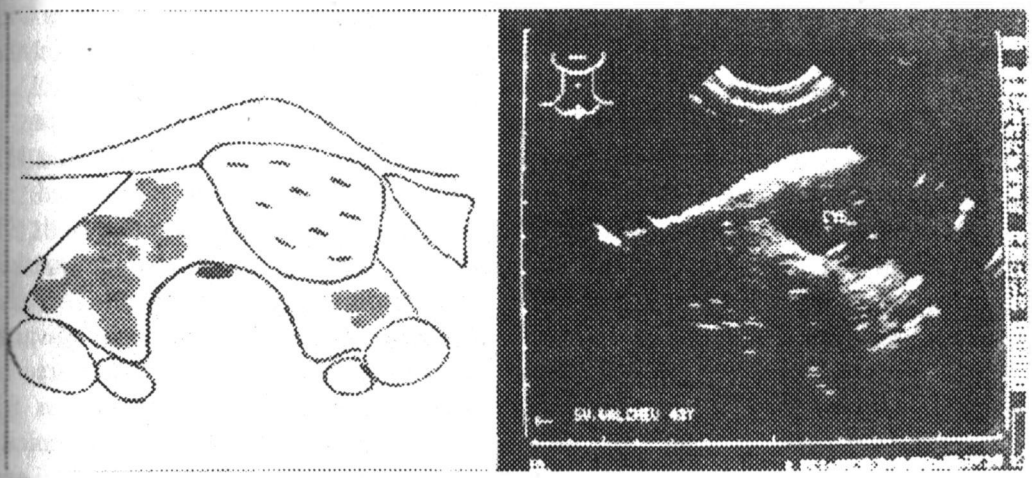

Fig. 2. Ultrasonographic image in a patient with ST

hypoechogenic zones and normalization of the echographic image could be considered typical findings in these cases. However, echographic structure normalization was an [illegible]ual but not an obligatory symptom. Minimal echographic changes of low hypoechogenicity persisted after the third [illegible]onth in 5 patients. No fibrosis [illegible]yperechogenic zones) was proved in these cases at all. This fact correlated with the lack of hypothyroid symptoms up to the end of the first year after disease onset. We established an isolated temporary hypoechogenicity lasting 30 days in one patient with provisory hypothyroid symptomatics and a neck tumour with absent isotope captation.

Diagnosis of silent thyroiditis was based on the accelerated ESR, cytological findings as well as on the sonographic and scintigraphic evolution of the disease.

Sonographic characteristics of HT patients showed a great variety. A hypoechogenicity of different degree was a common feature in all cases when using the echogenicity of the surrounding muscles as

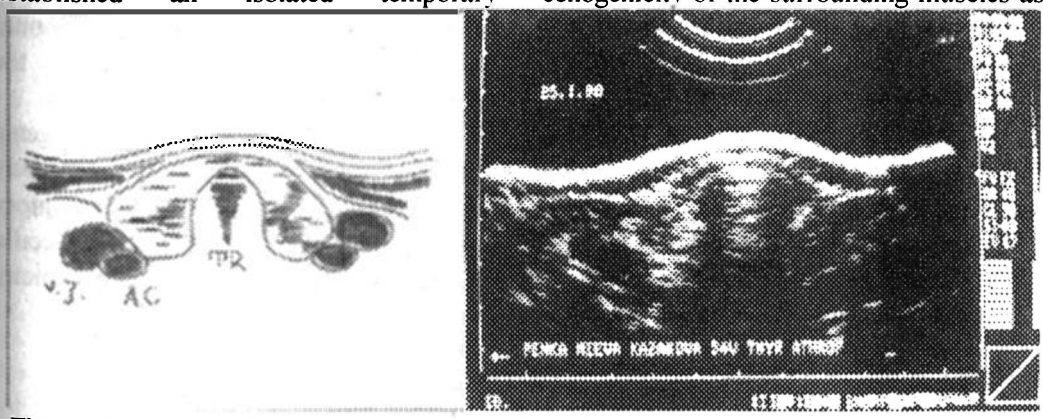

Fig. 3. Ultrasonographic image in a patient with Hashimoto thyroiditis

a basis for comparison (Fig. 3). We established an echogenicity equal or lower than that of *m. sternocleidomastoideus* in 42 cases with HT while in the rest 6 patients the image was almost near to that of the normal thyroid gland echostructure. Numerous hyperechogenic zones were observed in some cases. They, in our opinion, were most probably due to the developing fibrosis.

According the the size of the thyroid gland, the patients were divided into three groups as followed: a) with less than normal volume (< 12 ml) - 15 cases; b) with normal volume (between 12 and 22 ml) - 9 cases, and c) with greater than normal volume (> 22 ml) - 24 cases. An atrophic thryroid gland was found out in 30 of a total of 37 cases (81 per cent) with hypothyroidism. According to our data, dynamic echographic changes were unusual patterns in HT patients. Certain dynamic changes were established in two patients with the clinical diagnosis of Hashitoxicosis manifested with insignificant echogenicity elevation. Hypogenicity persisted as a feature in all sonographic control examinations of the typical cases of HT.

DISCUSSION

The ultrasonographic method allows the exact localization of pathological changes in cases with acute thyroiditis (4 - 6). It helps the visualization of the depth, dimensions and boundaries of the inflammatory process as well as its disposition among the rest tissues in the neck region.

The diffuse hypoechogenicity is a common feature in cases with ST and HT although it can not be considered an absolute pathognomonic sign for both ST and HT. Its establishing is always a marker of a pathological process. A specific regression of the hypoechogenicity towards the normal echostructure in the course of glucocorticoid therapy is reported in ST patients (3). If a diffuse hypoechogenicity is found out in a patient without any clinical symptoms and with non-specific scintigraphic findings, a HT has to be suspected. In cases of hyperthyroidism no echographic differences can be emphasized as specific for Basedow's disease and Hashitoxicosis. In cases of hypothyroidism an atrophic thyroid gland is considered a more specific finding (2, 9, 10).

CONCLUSIONS

1. Ultrasonography is a method of choice for localization of acute thyroiditis.
2. Hypoechogenicity undergoes a specific dynamics towards a normal echographic image during the glucocorticoid treatment in ST patients.
3. The finding of hypoechogenic thyroid gland in patients without any typical clinical symptoms and laboratory anomalies requires additional specific examinations as thyroid hypoechogenicity is always a pathological sign.

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Der diagnostische Wert der Sonographie bei der komplexen Untersuchung der Thyroiditis

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Zusammenfassung: Die Thyroiditis nimmt einen wesentlichen Anteil von der Pathologie der Schilddrüse ein. Mit Hilfe der Real-time-Sonographie wurde bei 68 Kranken eine Gegenüberstellung zwischen dem sonographischen Bild und den bestätigten Schilddrüsenerkrankungen (einer akuten eitrigen Thyroiditis, einer schmerzlosen Thyroiditis, einer subakuten Thyroiditis und einer Hashimoto-Thyroiditis) gemacht. Die Sonographie erlaubte die Lokalisierung der herdförmigen Veränderungen bei den akuten Entzündungen der Schilddrüse und die Abgrenzung der intraparenchymen Prozessen von denjenigen in den umgebenden Geweben. Die typische diffuse oder begrenzte Echoarmut war ein ernsthaftes Argument zum Beweis einer subakuten Thyroiditis und einer Hashimoto-Thyroiditis. Ein spezifischer Befund war die verhältnismäßig schnelle Normalisierung der Echostruktur im Laufe der kortikosteroiden Behandlung bei den Fällen mit einer subakuten Thyroiditis, während keine solche Veränderungen bei der Hashimoto-Thyroiditis gefunden wurden.

L'apport diagnostique de l'échographie dans un analyse complexe des thyroïdites

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Résumé: Les thyroïdites représentent une grande partie de la pathologie de la thyroïde. Chez 68 patients en usant la méthode de l'échographie en temps réel de la thyroïde on a fait une comparaison entre l'exploration échographique et les maladies de la thyroïde, déjà établiées: thyroïdite aïguë infectieuse, thyroïdite indolore, thyroïdite subaïguë et thyroïdite chronique de Hashimoto. L'échographie

est capable de localiser les modifications ponctuelement limitées chez les formes aïguës des thyroïdites et de distinguer les processus dans le parenchyme des processus infectieux autour de la glande. L'hypoéchogénicité typique diffusée ou limitée est un argument convaincu au profit de la thyroïdite subaïguë et de la thyroïdite de Hashimoto. La normalisation relativement vite de l'échostructure chez la thyroïdite subaïguë au cours de la corticothérapie est un trait caractéristique échographique, tandis que les changements pareils manquent chez la thyroïdite de Hashimoto.