Original article:

Study of Ultrasonographic Evaluation of Neck Masses at a Tertiary Care Hospital

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ABSTRACT

Background: Ultrasound is a relatively inexpensive, widely available noninvasive method of investigation. The traditional and exclusive use of ultrasound to separate cystic from solid lesions is outdated. Hence; under the light of above mentioned data, the present study was undertaken for assessing the ultrasonography findings in patients with neck masses.

Materials & Methods: A total of 30 patients with neck masses were enrolled. Compete demographic details of all the patients was obtained. Ultrasonography was done in all the patients under the hands of skilled and experienced radiologists. All the findings obtained were recorded in a master chart. Analysis of all the ultrasonography findings was done under the hands of skilled and experienced radiologists. All the results were recorded in Microsoft excel sheet and were analyzed.

Results: Solid masses with calcification were seen in 16.67 percent of the cases. Cystic area with solid echogenic tissue behind it was seen in 13.33 percent of the cases. Homogenous hypo-echoic mass were seen in 20 percent of the cases. Solid mass with poorly defined walls were seen in 23.33 percent of the cases. Fluid filled mass containing mobile echogenic debris were seen in 13.33 percent of the cases. Lobulated mass with hypo-echogenic areas were seen in 13.33 percent of the cases.

Conclusion: Ultrasonography is an excellent tool for assessing the nature of lesions in patients with neck masses. However; further studies are recommended.

Keywords: Ultrasonography, Neck, Mass, Cyst.

INTRODUCTION

Ultrasound is a relatively inexpensive, widely available noninvasive method of investigation. Although there is extensive documentation on the use of ultrasound in abdominal lesions, it appears to have been underutilized in the evaluation of neck masses. Ultrasound enables detection of thyroidal and extrathyroidal masses, and definition of their boundaries and their relationship to great vessels. The traditional and exclusive use of ultrasound to separate cystic from solid lesions is outdated.[1-3]

The significance of sonography in diffuse and focal thyroid pathologies is very crucial The sonomorphology and the vascularization in pathologies of the thyroid gland are discussed. Supplementary applications of scintigraphy and fine needle aspiration are pointed out. In hyperparathyroidism, the role of sonography to localize parathyroid adenoma is presented. The typical sonomorphology of benign cervical pathologies as cervical cysts,

322

angiomas, lipomas and carotid body tumors is explained. Sonography is the primary imaging method for the assessment of the thyroid gland and the surrounding cervical soft tissue.[4-6] Hence; under the light of above mentioned data, the present study was undertaken for assessing the ultrasonography findings in patients with neck masses.

MATERIALS & METHODS

The present study was conducted in the Department of Radiology, Padmashri Dr. Vithalrao Vikhe Patil Foundation's Medical College & Hospital, Ahmednagar, Maharashtra (India) and it included ultrasonography assessment of neck masses. Written consent was obtained from all the patients after explaining in detail the entire research protocol. A total of 30 patients with neck masses were enrolled. Compete demographic details of all the patients was obtained. Ultrasonography was done in all the patients under the hands of skilled and experienced radiologists. All the findings obtained were recorded in a master chart. Analysis of all the ultrasonography findings was done under the hands of skilled and experienced radiologists. All the results were recorded in Microsoft excel sheet and were analyzed by SPSS software. Chi- square test was used for assessment of level of significance.

RESULTS

In the present study, a total of 30 patients with neck masses were enrolled. Mean age of the patients of the present study was 38.4 years. 40 percent of the patients belonged to the age group of 25 to 50 years. 36.67 percent of the patients belonged to the age group of more than 50 years. 56.67 percent of the patients were males while the remaining were females. Solid masses with calcification were seen in 16.67 percent of the cases. Cystic area with solid echogenic tissue behind it was seen in 13.33 percent of the cases. Homogenous hypo-echoic mass were seen in 20 percent of the cases. Solid mass with poorly defined walls were seen in 23.33 percent of the cases. Fluid filled mass containing mobile echogenic debris were seen in 13.33 percent of the cases. Lobulated mass with hypo-echogenic areas were seen in 13.33 percent of the cases.

Table 1: Distribution of patients according to maternal age

Age (years)	Number	Percentage
Less than 25	7	23.33
25 to 50	12	40
More than 30	11	36.67
Total	30	100
Mean (years)	38.4	

Table 2: Distribution of patients according to gender

Gender	Number	Percentage
Males	17	56.67
Females	13	43.33
Total	30	100

Table 3: Ultrasonography findings

Ultrasonography findings	Number	Percentage
Solid with calcification	5	16.67
Cystic area with solid echogenic tissue behind it	4	13.33
Homogenous hypo-echoic mass	6	20
Solid mass with poorly defined walls	7	23.33
Fluid filled mass containing mobile echogenic debris	4	13.33
Lobulated mass with hypo-echogenic areas	4	13.33
Total	30	100

DISCUSSION

High resolution new-generation real-time machines allow recognition of secondary changes in the structure of basically solid or cystic masses. Infected cystic masses may give the impression of a solid neoplasm. Although partial or total necrosis within a lymph node may simulate a branchial cleft cyst, ultrasonography can in many cases recognize such a "cystic-looking" malignant lymph node and thus prevent a premature biopsy that could transform an initially curable disease into an incurable one.[5-7] Neck masses are a frequent occurrence and in some instances create a diagnostic dilemma for the clinician. Inflammatory lymphadenopathy is one of most common cause of a neck mass and will usually resolve with appropriate medical treatment. However, significant proportion of neck masses are malignant and thus accurate evaluation and differentiation from congenital, inflammatory, and other benign lesions is mandatory.[8] Hence; under the light of above mentioned data, the present study was undertaken for assessing the ultrasonography findings in patients with neck masses.

In the present study, a total of 30 patients with neck masses were enrolled. Mean age of the patients of the present study was 38.4 years. 40 percent of the patients belonged to the age group of 25 to 50 years. 36.67 percent of the patients belonged to the age group of more than 50 years. 56.67 percent of the patients were males while the remaining were females. Solid masses with calcification were seen in 16.67 percent of the cases. Douglas SA et al determined the accuracy of ultrasound in detecting the presence of pus in a neck mass in children. The presence of a clinically relevant abscess that did not respond to clinical management was used to determine the accuracy of the ultrasound result. The sensitivity of ultrasound in the detection of an abscess was 65% and the specificity 88%. The predictive value of a positive ultrasound result was 81% and the predictive value of a negative test 77%. Ultrasound is a useful modality in the evaluation of acute cervical masses but is observer dependent and has a relatively low sensitivity in detecting whether or not pus is present. The clinical indicators for the presence of an abscess are discussed and clinicians should combine clinical findings with the ultrasound findings in order to determine treatment.[7] Spinelli C et al analyze the problems of differential diagnosis and surgical treatment of neck masses in children, on the basis of 154 cases recruited in 20 years (at the Dept. of Surgery of the University of Pisa). Specific and unspecific lymphadenitis were observed in 26 (16.9%: and 18 cases 18 cases (11.7%), respectively. Hodgkins' lymphoma was present in 12 patients (7.8%). Thyroid disorders were diagnosed in 48 cases; 31 (20.1%) of these were benign, and 17 (11.1%) were malignant. Thirty-nine children showed congenital anomalies: 26 (16.9%) suffered from cysts of the

324

thyroglossal duct, 10 (6.5%) from branchial abnormalities, and 3 (1.9%) from cystic lymphangioma. Two dermoid cysts (1.3%) and 2 parotid gland mixed tumours (1.3%) were also observed. The deep knowledge of embryology and anatomy of the neck, a careful clinic examination, an echography, as well as a fine needle-aspiration, seem thus essential to achieve the correct diagnosis and treatment.[8]

In the present study, cystic area with solid echogenic tissue behind it was seen in 13.33 percent of the cases. Homogenous hypo-echoic mass were seen in 20 percent of the cases. Solid mass with poorly defined walls were seen in 23.33 percent of the cases. Fluid filled mass containing mobile echogenic debris were seen in 13.33 percent of the cases. Lobulated mass with hypo-echogenic areas were seen in 13.33 percent of the cases. Sherman NH et al reviewed the authors' two-year experience using ultrasonography in the evaluation of 34 children with neck masses. Twenty-two patients had lesions arising outside the thyroid gland; 12 lesions arose from the thyroid gland. Ultrasonography proved to be an accurate imaging modality for localizing the mass and demonstrating its relationship to the thyroid gland, trachea, and major neck vessels. The borders and extent of the lesions were well outlined, as well as their internal consistency. Based on the review, the authors recommend that ultrasonography be the first screening procedure in pediatric patients who present with perplexing neck masses.[9] Blei CL et al assessed the ultrasonic and fluorescent scanning findings in extrathyroidal neck lesions. Thirteen patients with suspected extrathyroidal neck masses were investigated with the combination of fluorescent scanning and echography. Iodine content, the solid or cystic consistency of the lesion, and the position of the lesion with respect to the thyroid were determined preoperatively to estimate thyroidal origin and benignity or malignancy of the lesions. Pathologic diagnoses correlated well with these totally noninvasive studies of extrathyroidal neck masses.[10]

CONCLUSION

Ultrasonography is an excellent tool for assessing the nature of lesions in patients with neck masses. However; further studies are recommended.

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325

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