Original Research Article

Ultrasound evaluation of neck masses in adult rural population

Soneshkumar R Chougule

Assistant Professor, Department of Radiodiagnosis, B.K.L. Walawalkar Rural Medical College, A/P-Sawarde, INDIA.
Email: sonesh.chougule@yahoo.com

Abstract

Background: A total of one hundred Adult patients with neck swellings were evaluated ultrasonographically in general rural population. Multinodular goitre (48%) was found to be the most common cause followed by cervical lymphadenopathy which included cases ranging from nonspecific inflammatory responses(22%) to non Hodgkins lymphoma(1%). Ultrasound examination plays a very important part in evaluation of neck swellings. This procedure is economical, non-invasive and free from ionizing radiation.
Key words-Ultrasound, neck masses, thyroid gland, lymph node.

Address for Correspondence:
Dr Soneshkumar R Chougule, Department of Radiodiagnosis, B.K.L. Walawalkar Rural Medical College, A/P-Sawarde, INDIA.
Email: sonesh.chougule@yahoo.com
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INTRODUCTION

High resolution B-mode sonography has rapidly evolved in the past few years and has become a valuable tool in evaluation of head and neck lesions.[1,6] Though newer modalities like spiral CT scan and magnetic resonance imaging have added advantage, ultrasonography is commonly the first imaging modality undertaken after clinical examination.[1,6] The neck is a cylindrical structure in which the vertebral column with surrounding musculature occupies the posterior half, whereas the cervical viscera (pharynx, larynx, oesophagus, trachea, thyroid and parathyroid glands) lie in the anterior half. The neck is divided into various triangles and various masses have varied predilection for them. Fine needle aspiration cytology (FNAC), especially ultrasound guided ones, together with tissue biopsy help in finalizing diagnosis.

Neck masses are classified according to etiology as follows-

1. Congenital e.g. Fibromatosis Coli, cystic hygroma.
2. Inflammatory e.g. Tuberculosis, viral infections.
3. Neoplastic e.g. lymphomas and carcinomas of the thyroid gland.
4. Miscellaneous e.g. lingual thyroid.

Ultrasound imaging allows evaluation of the size and extent, relationship to adjacent structures like carotid vessels and also to distinguishing solid from cystic lesions. It serves as a valuable tool for site selection with regard to FNAC. Benign lesions like lipomas, carotid body tumors and hyperplastic lymph nodes have characteristic ultrasound appearance. Combined with FNAC it has high sensitivity (98%) and specificity (95%).[2]

AIM

To study ultrasound appearance of head and neck masses in adult patients and correlate them with FNAC diagnosis.

MATERIAL AND METHODS

One hundred cases of neck masses above 18 years of age, irrespective of sex, attending out patient department of our institution were evaluated. A 7.5-9 MHz high frequency array transducer together with GE LOGIC machine (General Electric, USA) was used for ultrasound examinations. Patients were examined in the supine position with pillow placed on the back to facilitate neck

extension. The entire neck was examined in both the longitudinal and transverse planes. FNAC was performed on all 100 cases. Ultrasound and FNAC diagnosis were correlated.

Table 1: Thyroid malignant lesions

DIAGNOSIS	NO.of cases	USG/FNAC Correlation
PAPILLARY CARCINOMA	03	50%
FOLLICULAR CARCINOMA	01	50%
MEDULLARY CARCINOMA	01	50%
ANAPLASTIC CARCINOMA	01	50%

Table 2: Thyroid benign lesions

DIAGNOSIS	NO.of cases	USG/FNAC Correlation
MULTI NODULAR GOITRE	48	100%
HASHIMOTOS THYROIDITIS	05	100%

TABLE 3: LYMPH NODE-MALIGNANT LESIONS

DIAGNOSIS	NO.of cases	USG/FNAC Correlation
NON HODGKINS LYMPHOMA	01	0%

TABLE 4: LYMPH NODE-BENIGN LESIONS

DIAGNOSIS	NO.of cases	USG/FNAC Correlation
NON SPECIFIC LYMPHADENITIS	01	100%
TUBERCULAR LYMPHADENITIS	02	0%

TABLE 5: MISC BENIGN LESIONS

DIAGNOSIS	NO.of cases	USG/FNAC Correlation
PLEOMORPHIC ADENOMA	02	100%

DISCUSSION

One hundred cases of neck swellings were studied. Multinodular goitre was found to be the most common lesions (48%) followed by non specific lymphadenitis (22%). Correlation with FNAC had 100% sensitivity and 100% specificity. Multinodular goitre appear as heterogenous nodules having both solid and cystic component. Most of them are hypoechoic but few of them are isoechoic and hyperechoic. This is a varied non specific appearance. (Scheible *et.al.* Simone *et.al.* F Lowener and Rumack *et al.)*[4,5,6,7] Few nodules having echogenic foci with comet tail artifacts due to dense colloid material in degenerated goitreous nodules. This was taken as a sure sign of benignity (Ahuja and Rumack *et al.*). In these cases radio nucleotide scan is the most sensitive investigation.

THYROID COLLOID GOITRE

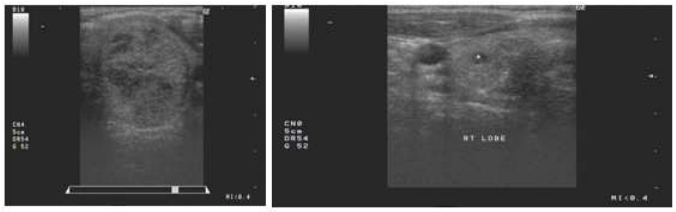

Figure 1

H ASHIMOTOS THYROIDITIS-

This lesion appears as a diffuse glandular enlargement with homogenous coarse parenchymal echo texture. Multiple discrete hypo echoic micro nodules are present which show increased vascularity on Doppler study (Rumack *et al.*).[5]

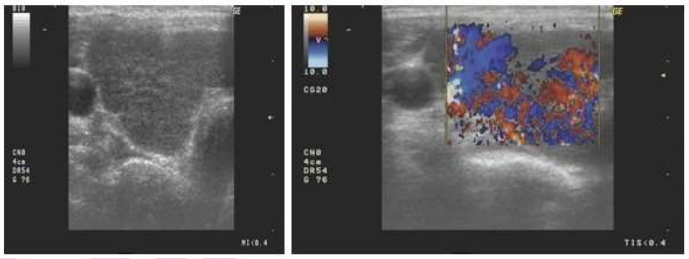

Figure 2

PAPILLARY CARCINOMA-

Appears as hypoechoic foci with or without acoustic shadows and punctuate echogenic foci due to micro calcifications. Anaplastic carcinoma, follicular and medullary carcinoma appear as hypo or hyperechoic lesions and can not be differentiated.

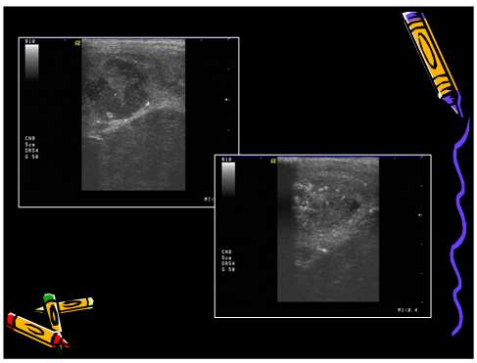

Figure 3

Non specific lymphadenitis appears as well defined round to oval lesions of variable length. Normal lymph nodes are not visualised on sonography. Tubercular lymphadenitis(collar stud abscess)is seen as hypoechoic lesion with swirling movement. Non Hodgkins Lymphoma and Burkitts lymphoma appear as heterogenous lesions and cannot be diagnosed on sonography.

Figure 4

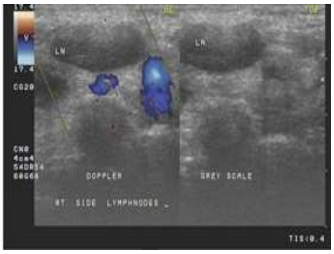

Figure 5

CONCLUSION

1. In our institution ultrasonography is used as a screening tool in differentiating multinodular goitre from neoplastic lesions of the thyroid gland.
2. Ultrasonographic correlation with FNAC is 100% in diagnosing Hashimotos throiditis, non specific and tubercular lymphadenitis. USG/FNAC correlation is 50% in cases of papillary carcinoma, medullary, anaplastic and follicular carcinomas of the thyroid gland but there is absolutely no correlation in diagnosis of lymphomas.
3. This investigative modality is free from radiation and is economical and non invasive procedure which is well tolerated by the patients.

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