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The Accuracy of Ultrasound and Color Doppler Imaging in the Differential Diagnosis of Cervical Lymphadenopathy

A thesis
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Abstract:

Background: Cervical lymphadenopathy is a common presenting sign and symptom for various array of diseases, ranging from mild infections to life threatening head and neck malignancies.

The clinical examination alone cannot be considered as a diagnostic tool to determine the involvement of cervical lymph nodes especially deep or small nodes. Many diseases involve lymph nodes, so that detection of lymph node has great therapeutic and prognostic implications. It is in this context that imaging modalities such as Magnetic Resonance Imaging, Computed Tomography scan and Ultrasonogram have an important role in examination of clinically undetectable lymph nodes.

Aims of the study: This study was designed to evaluate the patients with cervical lymphadenopathy clinically, differentiate between benign and malignant lymph nodes by means of ultrasound and color Doppler ultrasound and to correlate between the ultrasound and color Doppler ultrasound findings with cytological or histopathological findings of cervical lymph nodes.

Subjects, materials and methods: Ninety tow patients with cervical lymphadenopathy was examined, eleven of these patients left the study because they refused to do biopsy, Eighty one patients with cervical lymphadenopathy were participated in this study, their ages ranged from (5-75) years, each patient was examined intra and extra orally. All the patients presented with cervical swelling were either unilateral or bilateral with different duration ranging from (1-12) months. Some of them had night sweating, fever, pain and loss of appetite. This study was carried out during the period from the end of November 2017 until May 2018 in Al-Sader Teaching Hospital in Al-Najaf city. The clinical examination of the lymph nodes was done for their location, size, consistency, and fixity to decide whether the palpable node is benign or malignant. Ultrasound GE device, B-mode, grey scale, with high resolution

real-time scanner, using (7.5 MHz) linear array transducer. Aquasonic material was used to allow transmission of ultrasound beam and easy movement of the transducer on the examined areas. Ultrasonographic examination of the neck for cervical lymph nodes was performed using GE ultrasound machine. The scanning was performed with the patient in the supine position, and with the neck hyperextended using a pad or pillow under the shoulders in order to provide optimum exposure of the neck. The parameters considered in this study included: site, longest axis, shortest axis, shape index , echotexture and homogenicity, borders, ancillary features like calcification, necrosis, matting and surrounding tissue changes. Color Doppler examination include location of vascularity, resistive index and pulsatility index. These findings were correlated with fine-needle aspiration cytology and excisional biopsy. The nodes were classified as benign and malignant. The results were subjected to statistical analysis using SPSS software. A p value of <0.05 was considered to be significant. All subjects underwent histopathological examination (23 FNA and 58 core or excisional biopsy of the lymph node), 28 biopsy required immunohistochemistry for final diagnosis.

Results: According to histopathology 40 lymph nodes were malignant and 41 lymph node were benign. Eleven of the malignant lymph nodes were non-Hodgkin lymphoma, (17) were of Hodgkin disease and 12 were metastatic, one of the metastatic nodes were from papillary carcinoma of the thyroid.

The main clinical findings of malignant lymph nodes were hard, fixed and larger than 1 cm. Ultrasound examination showed that most of malignant nodes were (round, short to long axes dimeter were high, well defined borders, loss of echogenic hilum, necrosis and matting may be percent). Color Doppler examination showed most of malignant lymph nodes were with (peripheral or mixed vascularity and higher resistive and pulsatility indicies than benign lymph nodes).

Conclusions: Sonographic findings have a high accuracy in differentiating benign from malignant cervical lymph nodes. High resolution color Doppler ultrasound may provide information that is useful in making correct diagnoses.