

CLOSE COOPERATION BETWEEN THE ENT SPECIALIST PERFORMING ULTRASONOGRAPHY AND THE PATHOLOGIST FOR THE MANAGEMENT OF HEAD AND NECK MASSES

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Abstract: We aim at implementing ultrasound examination performed by the ear, nose and throat (ENT) specialist as the central diagnostic tool in the management of cases with head and neck masses. We present a series of 97 cases with head and neck masses that benefited from the use of ultrasonography performed first hand by the ENT specialist in order to differentiate benign from malignant lesions. All cases that underwent surgical treatment had the initial ultrasonographic diagnosis cross referenced with the pathology result. We underline those cases where the ultrasound exam changed the diagnosis between benign and malignant lesions. Ultrasonography exam is cost-effective and improves the adhesion of the patient to the treatment. The main advantages of ultrasonographic imaging are lack of irradiation and the possibility to repeatedly examine a lesion in order to ascertain its response to treatment. Sonography prevented misdiagnosing the neck mass and the optimum management was installed earlier.

INTRODUCTION

Ultrasonography is a well established tool in the clinical diagnosis and management of head and neck masses and it is credited with 96.8% sensitivity and 93% specificity in detecting malignancy.(1) However, there is a long road towards achieving this accuracy in diagnosis starting from mastering the ultrasonographic anatomical landmarks (2) and continuing with identifying various sonographic criteria (3) - size (4), shape (5), number, margins, echogenicity (6), necrosis (7), calcifications, hilum, vascular pattern (8), invasion, etc. Moreover, the diagnosis is hindered by the great variety of possible etiologies ranging from reactive lymph nodes, lipomas (9), brachial and thyroid cysts, glomus tumours, to salivary gland pathology (10), thyroid pathology (11) and metastatic lymph nodes.(12) Ultrasonography has a proven similar accuracy with CT and MRI with lesser costs.(13) Furthermore, ultrasound guided procedures enable the quick diagnosis necessary for modern treatment.(14) Needless to mention the continuing development of novel techniques meant to improve the sensitivity and specificity of ultrasonography: elastography (15) and CEUS.(16) On the other hand, the great majority of studies are performed in diagnostic imaging departments not in ENT departments with ENT performed ultrasonography.(17)

PURPOSE

The present research aims at analyzing the impact of ENT performed ultrasonography as a central imaging tool in the management of cases with head and neck masses. We hope to ascertain the growth in adherence to treatment and the cost effectiveness of relying on ultrasonographic findings and reducing the referral to already crowded CT and MRI departments. Moreover, the use of ultrasonography at the initial hospital visit will expedite the correct triage of the patients towards proper management in allied speciality clinics, such as hematology, endocrinology or oncology departments.

MATERIALS AND METHODS

This is a prospective descriptive study comprising a group of patients with head and neck masses admitted to "Colțea" Clinical Hospital between 2012 and 2013. All data presented in this paper come from patients admitted to the ENT Department, "Colțea" Clinical Hospital. All patients signed an Informed Consent in compliance with the Declaration of Helsinki and current Good Clinical Practice.

The study group reunites 97 patients with head and neck masses which first underwent the standard ENT clinical exam. The results of the first ENT exam were coded in the binomial variable of benign/malignant. Afterwards, the patients benefited from ENT performed ultrasonography, which in some cases changed the initial diagnosis of benign/malignant in one of three possible: inflammatory, chronic benign and malignant. Thus, the patient could benefit from three therapeutic actions: conservative, referral and surgery. All cases were examined on a portable Sonoscape S2 ultrasound machine with linear probe and the statistical analysis was performed in EXCEL for a better compatibility with WORD format.

RESULTS

From the point of view of descriptive statistics, our study group is characterised by 61% (59) males and 39% (38) female patients, 36% (35) patients from rural areas and 64% (62) patients from urban areas. The age group distribution was the following: 18 patients between 15-30 years old, 40 cases between 31-45 years old, 23 patients in the age group 46-60 years, and 16 patients aged between 61-75 years old.

After the initial ENT clinical exam, the group reunited 41 cases (42%) with benign masses and 56 patients (58%) with supposedly malignant pathology. All cases were submitted to ultrasound examination and table no. 1 depicts the criteria used for a clear diagnosis of benign lesions and table no. 2 comprises some of the cases with malignancy.

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Table no. 1. Some of the cases recorded with benign head and neck masses

Name	Size	Shape	Echotexture	Hilum	Necrosis	Flow	Location	Diagnosis
S.M.	8mm	Oval	Hypoechoic	Present	None	No peripheral	Ila	Reactive
G.T.M.	10mm	Oval	Hypoechoic	Present	None	No peripheral	III	Reactive
N.D.	15mm	Oval	Anechoic with posterior acoustic enhancement			None	VI	TDC
P.A.M.	8mm	Flat	Hypoechoic	Present	None	No peripheral	III	Reactive
F.M.A.	16mm	Round	Hypoechoic	Absent	Cystic	Peripheral vessels	IV	TB
D.A.L.	Left gland, enlarged and hypoechoic, calculus with posterior acoustic shadow				None	Normal	Ib	Submandibular sialolithiasis
I.B.	9mm	Oval	Hypoechoic	Present	None	No peripheral	Ila	Reactive
H.S.	7mm	Linear	Hyperechoic	Posterior shadow, surrounding edema			VI	Foreign body
L.C.A.	18mm	Round	Hypoechoic	Absent	Cystic	Perfusion defects	V	TB
P.D.	14mm	Oval	Feathery	Present	None	Hilar	Ib	Lipoma
V.A.G.	7mm	Flat	Hypoechoic	Present	None	No peripheral	Iib	Reactive
G.S.	12mm	Round	Heterogeneous echo pattern due to repeated infections			None	VI	TDC
M.B.V.	Left gland, hypoechoic, with dilated ducts, calculus with posterior acoustic shadow				None	Normal	Ib	Submandibular sialolithiasis
D.V.	Hypoechoic, diffuse, compressible under probe, mobile between muscle groups					None	III, IV, VI	Diffuse cervical abscess

Table no. 2. Some of the cases with malignancy

Name	Size	Shape	Echotexture	Hilum	Necrosis	Flow	Location	Diagnosis
A.E.C.	11mm	Round	Hypoechoic	Absent	Cystic	Peripheral vessels	Ila	SCC metastasis
S.S.	14mm	Oval	Reticulated	Present	None	Hilar pattern	V	Lymphoma
P.A.	18mm	Round	Hypoechoic	Absent	Coagulation	Perfusion defects	III	SCC metastasis
V.D.G.	15mm	Round	Hypoechoic	Present	None	Hilar pattern	V	Lymphoma
P.I.G.	13mm	Round	Hypoechoic	Absent	Cystic	Peripheral vessels	Ila	SCC metastasis
E.I.	10mm	Round	Hyperechoic microcalcification	Absent	Cystic	Peripheral vessels	VI	Thyroid carcinoma metastasis
I.S.	9mm	Oval	Very hypoechoic	Absent	None	Hilar pattern	I	Lymphoma
C.G.D.	20mm	Round	Hypoechoic	Eccentric cortical hypertrophy	Cystic	Aberrant vessels	IV	SCC metastasis
E.F.N.	11mm	Round	Hyperechoic	Absent	Cystic	Peripheral vessels	VI	Thyroid carcinoma metastasis
D.L.	17mm	Round	Hypoechoic	Absent	Coagulation	Peripheral vessels	III	SCC metastasis

DISCUSSIONS

Afterwards, the ultrasound exam changed the distribution of patients per benign/malignant as follows: 32 (33%) cases proved to be of inflammatory nature, 13 (13%) cases were considered chronic benign and a slight decrease in malignant pathology towards 52 (54%) cases.

Figure no. 1 shows the case distribution taking into account the aetiology. This led to the following distribution of the cases per proposed treatment: 37 patients (38%) received conservative treatment with antibiotics and anti-inflammatory compounds, 17 cases (18%) were referred to other departments and 43 cases (44%) underwent surgery.

Figure no. 1. Distribution of the study group taking into consideration the etiology

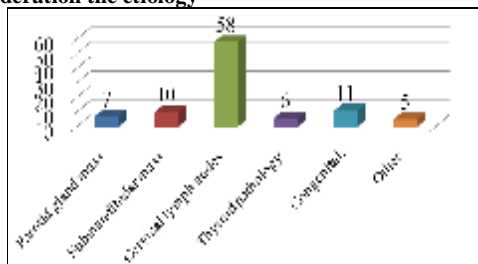
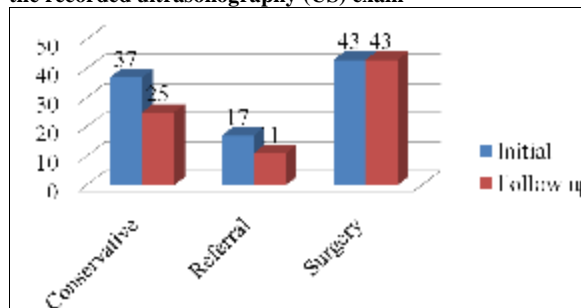


Figure no. 2 depicts, from a statistical point of view, the increase in compliance of patients after viewing the recorded ultrasound exam.

Figure no. 2. Patient compliance to treatment after viewing the recorded ultrasonography (US) exam



CONCLUSIONS

Head and neck ultrasonography is a powerful screening and diagnostic tool in the hand of the ENT specialist. The main advantages are cost efficiency, lack of irradiation and fast serial examinations. Moreover, ultrasonography can assess the treatment efficiency in cases benefiting from chemo and radiation therapy. Correct identification of anatomical landmarks allows a proper TNM staging of the cases, thus gaining time and choosing the optimum treatment option. Associating novel technical advances like sonoelastography and CEUS the diagnostic power is of 92% sensitivity, 94% specificity and even the most difficult cases can be solved prior to surgery. However, there are few studies showing the

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perspective of the ENT specialist performing ultrasonography of the head and neck, the majority of data reviewed here are gathered in radiology departments.

All the cases that underwent surgery in our department had the diagnosis confirmed by the pathologist. Viewing the recorded US exam made the patients more compliant to the treatment.

From the point of view of descriptive statistics – cases in all age groups with a maximum between 31-45 years, male predominance consistent with worldwide data.

US exam was of great value in 2 cases: one patient with a foreign body where US helped the localization and excision with a minimal incision; one patient with diffuse cervical abscess where the drainage was immediately performed.

The use of ultrasound criteria changed the initial benign diagnosis in 11 cases, these patients were diagnosed with lymphomas and referred to the hematology department, thus 1 in 10 cases would have been misdiagnosed and 1 in 5 malignancies would have been missed. In 6 cases with thyroid pathology, given our limited experience and lack of an associated endocrinologist in our department, we referred them to “Parhon” Endocrinology Institute.

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