

## A clinic for the rapid processing of patients with neck masses

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### Abstract

Neck masses are common and may have serious underlying pathology. There is much anxiety and confusion in primary care as to which hospital department will provide the patient with the best service and the swiftest diagnosis. A clinic was set up at Wexham Park hospital to enable patients with neck masses to be seen early, and to undergo a one-stop specialist evaluation, ultrasound scan and fine needle aspiration biopsy. The clinic has yielded a wide variety of benign and malignant pathology. The first 100 patients are discussed and evaluated.

**Key words:** Head and neck neoplasms; Lymph node; Neck; Ultrasonic diagnosis

### Introduction

The patient presenting with a mass in the neck is a common occurrence in general practice. The presence of any lump can cause concern to both the patient and the doctor. There is confusion over which specialty will provide the patient with the best diagnostic and therapeutic service. Referral patterns vary widely, and patients with both benign and malignant neck disease may find themselves in one of a number of hospital out-patient clinics being managed by clinicians with little experience of dealing with major head and neck pathology.

A recurring problem is the patient with an occult primary carcinoma in the upper aerodigestive tract who is referred to the Otolaryngologist after a lymph node from the neck containing squamous cell carcinoma has already been excised. This is inappropriate management (Gianoli and Miller, 1992), and delays accurate diagnosis, increases the patient's morbidity (London *et al.*, 1996) and may also jeopardize long-term survival (Bridger and Reay-Young, 1978; McGuirt and McCabe, 1978; Ellis *et al.*, 1991; Mack *et al.*, 1993).

The management of neck masses is patchily taught at medical school, frequently resulting in general practitioners and hospital physicians lacking the confidence to make a differential diagnosis of a neck mass. As disease which presents as a mass in the neck is often serious and can be the cause of considerable concern to the patient (Lampe and

Cramer, 1991), a direct referral clinic was established to rationalize the management of patients whose primary presenting complaint was a neck mass.

### Patients and methods

The clinic was designed to be open to all general practitioners and hospital departments. The rationale behind setting up the clinic was to improve the overall standard of care provided for patients with neck masses by concentrating them under the care of one clinician. Any patient whose primary presenting complaint was a mass in the neck could be referred directly and expect to be seen within two weeks. A circular was sent to all local practices and hospital consultants to inform them of the existence of the clinic and of how to refer a patient to it.

The clinic is staffed by a Consultant otolaryngologist and a Consultant radiologist. On arrival in the clinic, the patient is examined by the surgeon and then undergoes an ultrasound scan, with, if appropriate, a fine needle aspiration biopsy performed under ultrasound control. A preliminary diagnosis can then be reached and the patient managed appropriately.

### Results

One hundred patients were seen in the first year. Nearly half of the referrals (46 per cent) were for enlarged lymph nodes. Thirty-three of these were caused by a benign process, 10 contained squamous cell carcinoma and three lymphoma. In 21 per cent

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of cases the swelling originated in the thyroid gland and five of these subsequently underwent surgery. Eighteen salivary gland swellings presented of which 11 were in the parotid, two being malignant and seven were in the submandibular gland of which one was malignant. There were also nine miscellaneous lesions including cysts and skin lesions. One patient had recurrent, dramatic neck swelling which was diagnosed as angioedema. Additionally, in one patient the neck mass was thought to be a recurrent lesion in the scar of a previous resection of what we believe to have been a cystic hygroma, and another believed she had a recurrence at the site of a previous excision of a submandibular gland for pleomorphic adenoma. Ultrasound scanning and clinical examination failed to reveal anything more than a hypertrophic scar in both patients. In one patient the mass felt was merely a prominent cervical vertebra. A summary of the diagnoses encountered can be seen in Table I.

From the first 100 cases only two were considered inappropriate referrals, that is that the patient had no palpable neck mass. These were both patients with a sensation of globus and they were treated appropriately and followed up in the main clinic.

Forty-seven out of 100 patients required operations. These were varied and included a number of major head and neck procedures. The most commonly performed procedures were those of lymph node biopsy and panendoscopy (see Table II). It should be stressed that of the eight lymph nodes excised, three were removed to stage lymphoma, two to diagnose tuberculosis, one to diagnose an

TABLE II  
SUMMARY OF SURGICAL PROCEDURES PERFORMED ON PATIENTS  
PRESENTING PRIMARILY TO THE CLINIC

Procedure	Number
Panendoscopy	9
Lymph node biopsy	8
Skin lesions	3
Neck dissection	6
Thyroidectomy	5
Submandibular gland excision	5
Parotidectomy	4
Laryngectomy	2
Other head and neck procedures	5

enormous swelling which was found to be a benign intranodal myofibroblastoma, and one, in a patient feared to have lymphoma, turned out to have Kikuchi's disease (histiocytic necrotizing lymphadenitis). Only one reactive node was excised and this was in a patient with systemic symptoms where lymphoma had to be excluded.

The only major diagnostic surprise was in one patient who appeared to have a large retrosternal goitre. At surgery the mass was found to be extra-thyroid in origin and turned out to be a thymoma.

### Discussion

The argument about who should look after patients with both benign and malignant head and neck disease is likely to continue. One incontrovertible fact remains that patients can expect a better outcome if managed by a specialist, multidisciplinary team with experience and expertise in the field and a constant throughput in their departments (Edwards *et al.*, 1997; Tobias, 1997). The uncertainty within primary care as to whom to refer the patient along with competition between various specialties, and a wide variation in sub-specialist experience makes this treatment maxim far from guaranteed.

The idea of setting up a clinic specifically for patients with a palpable neck lump was our attempt to rationalize referral patterns and simplify the complex decision as to which specialist to send the patient to. The decision may previously have been taken for a variety of reasons not least patients being referred inappropriately to a clinician because of his short waiting list (McRae *et al.*, 1992). We aimed to provide a service such that once referred the patient would be seen by a Consultant head and neck surgeon within two weeks.

The concept of using ultrasound in the clinic has several obvious advantages. The principle was based on the existing breast clinic where patients are scanned, X-rayed and fine-needled at one appointment, giving a swifter and more accurate diagnosis. Ultrasound is highly operator dependent and the still photographs are notoriously difficult to interpret (Gritzmann and Koischwitz, 1993). This emphasizes the value of having a dedicated head and neck radiologist perform the scans in the clinic with the surgeon present.

The use of ultrasound in the neck has been found to be helpful diagnostically in confirming the anatomical structure in which the lesion is to be

TABLE I  
BREAKDOWN OF THE CONDITIONS ENCOUNTERED IN THE FIRST 100  
PATIENTS SEEN IN THE CLINIC

Structure	Pathology	Number
Lymph node	Benign	33
	S.C.C. head & neck	8
	S.C.C. lung	1
	S.C.C. occult primary	1
	Hodgkin's disease	2
	Non-Hodgkin's lymphoma	1
Thyroid	Multinodular goitre	5
	Cyst	5
	Adenoma	6
	Toxic nodule	1
	Papillary carcinoma	2
	Anaplastic carcinoma	2
Parotid	Inflammatory	4
	Adenolymphoma	2
	Pleomorphic adenoma	1
	Oncocytoma	1
	Toxoplasmosis	1
	Adenocarcinoma	1
Submandibular gland	Lymphoma	1
	Inflammatory	5
	Pleomorphic adenoma	1
Miscellaneous	Lymphoma	1
	Skin lesions	5
	Thyroglossal cyst	2
	Branchial cyst	1
	Thymoma	1
	Scar tissue	2
	Angioedema	1
	Cervical vertebra	1
No palpable mass	2	

found, whether the lesion is single or multiple, cystic or solid and its relation to other normal anatomical structures (Barki, 1992). Enlarged lymph nodes were the most common reason for referral, the concern being whether the underlying cause was malignancy. Ultrasound has been demonstrated to be a sensitive diagnostic modality for distinguishing between benign and malignant lymph nodes as small as 10 mm (Kruyt *et al.*, 1996). It has been shown that the long to short axis ratio on ultrasound scanning is an excellent criterion for differentiation between benign and malignant cervical lymphadenopathy. Those nodes with a long to short axis ratio of more than two can be correctly diagnosed as benign and those with a ratio of less than two correctly identified as malignant in 95 per cent of cases (Steinkamp *et al.*, 1995). The sonographic picture is also helpful in distinguishing lymphomas from other causes of cervical lymphadenopathy. The nodal distribution patterns, along with distal enhancement and a lack of central nodal necrosis point towards a diagnosis of lymphoma (Ahuja *et al.*, 1996). The use of ultrasound guidance when performing fine needle aspiration biopsy has been clearly established to improve diagnostic accuracy especially when the lesion is a small, mobile lymph node (van den Brekel *et al.*, 1993).

It is our opinion that all adults with a troublesome neck mass should undergo fine needle aspiration biopsy. In the presence of an expert cytologist, the information yield is high and this may influence both the pace and extent of the procedure performed (Baatenburg-de-Jong *et al.*, 1993). It was possible to reassure and discharge many of our patients with benign reactive lymph nodes on the basis of normal fine needle cytology. The benefit is evident when considering only one benign reactive node was excised out of 29 referred.

While the use of fine needle aspiration is widespread in patients with palpable cervical lymph nodes, its use in other neck masses remains controversial. In our series 21 per cent of referrals were for thyroid enlargement. Cystic thyroid masses can be treated by aspiration alone although recurrent cysts should be excised (Rosen *et al.*, 1986). With solitary nodules, however, although fine needle aspiration cytology remains the best diagnostic test available, persistent problems occur in distinguishing between benign and malignant follicular neoplasms, and a non-diagnostic cytology result of between 20–25 per cent (Grant *et al.*, 1989; Hamburger and Hamburger, 1991; McHenry *et al.*, 1993).

The arguments regarding the role of aspiration cytology in parotid lesions revolve not around the diagnostic accuracy, rather that a pre-operative diagnosis does not alter management (McGurk and Hussain, 1997). Fine needle aspiration results for salivary tumours are good and knowledge of the pathology is helpful in the pre-operative evaluation of the patient (Candel *et al.*, 1993). Our philosophy is that pre-operative counselling and early involvement of a Macmillan head and neck nurse specialist in patients with malignancy improves the quality of

service provided to these patients, hence fine needle aspiration should be performed on all parotid masses. The increased incidence of malignancy in tumours of the submandibular gland and the improved survival with more radical surgery makes the case for fine needle aspiration cytology more clear-cut (O'Brien *et al.*, 1986; Spiro *et al.*, 1989).

Although our series only contained one branchial cyst, fine needle aspiration should again be considered mandatory both because it is potentially therapeutic and to distinguish such a benign lesion from a malignant lymph node masquerading as a simple branchial cyst (Flanagan *et al.*, 1994).

The benefits of the clinic for patients is self-evident. It enables patients with potentially serious disease to be seen, diagnosed and if necessary operated on rapidly by a team with the diagnostic skills and surgical repertoire to deal with all major head and neck pathologies.

Establishing a clinic specifically for patients with a palpable neck mass had several aims. These included an attempt to rationalize referral patterns by allowing all patients with a neck mass to be seen in one clinic, simplify the patient journey by carrying out all the diagnostic procedures at the time of first consultation and create an environment where the safe management of head and neck masses could be taught to surgical, medical and radiological trainees.

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