NEWS

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ENT SURGEONS

NEWS

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IN THIS ISSUE

In this issue we aim to share our clinical experience in the field of ENT surgery and Facial Plastics and would encourage feedback from GPs on the contents of the newsletter and on what they would like to hear about in future issues.

A partnership of six ENT consultants covering all aspects of ENT

EDITOR **Mr A Aymat**

T **020 8297 4774**

F **020 8297 4775**

E **secretary@londonentsurgeons.co.uk**

www.londonentsurgeons.co.uk

How We Investigate Thyroid Disease

by Ricard Simo & Tony Jacob

Thyroid pathology is common and includes solitary thyroid nodules, multinodular goitres, thyrotoxicosis, thyroid cancer and thyroiditis. Most patients attending head and neck and endocrine surgery clinics will present with solitary nodules. Patients may also present with multinodular or diffuse masses with or without compression symptoms. The clinician should aim their management strategy at determining the patient's thyroid function status, and diagnosing thyroid pathology that may require treatment.

Clinical presentation

Solitary thyroid nodule (STN)

Solitary thyroid nodules are very common and may occur in 4-7% of the adult population. The great majority of them are benign with an average of only 10% being malignant. The investigations should be therefore aimed at excluding malignancy and selecting the cases that require surgery.

Multinodular goitres without compression symptoms

The causes of goitre are diverse, but are often due to the development of a non-toxic multinodular thyroid goitre (MNG). Often a MNG presents as a solitary thyroid nodule, as there is only one clinically palpable dominant nodule within the goitre. The incidence of malignancy within multinodular goitres may range from 5 to 23% and therefore these patients should enter a STN investigation protocol.

Multinodular goitres with compressive symptoms

This clinical presentation results from a goitre growing into the mediastinum compressing the anatomical structures of the superior thoracic inlet with the potential for patients to develop serious respiratory symptoms. It can also develop from goitres growing around the trachea and the oesophagus at cervical level. These patients may have a dominant nodule and therefore should be investigated in the same manner as STN but in addition should have adequate imaging to determine the exact anatomy of the cervical and mediastinal components. This will also aid to plan their surgery should this be indicated. The incidence of cancer is the same as the above group.

Diffuse goitres

Diffuse goitres may either be due to non-toxic multinodular goitres without a dominant palpable nodule, thyrotoxic goitres either Graves disease or toxic nodular disease (Plummer's disease) and thyroiditis. Thyroid cancer rarely presents in this manner. However, the incidence of thyroid cancer in thyrotoxicosis ranges between 2.2 and 6.2% and the clinician investigating these patients should take this in consideration.

Lateral neck masses

Patients with thyroid cancer may present with a lateral thyroid mass. The incidence of cancer in a lateral thyroid mass is about 10%. These represent metastatic lymphadenopathies and they are often cystic. The long-standing lateral neck mass in a young patient should raise the clinician's index of suspicion for thyroid carcinoma.

Clinical Evaluation and Diagnosis

History

The history of a patient presenting with a thyroid mass or swelling should include: length of symptoms, progression, growth pattern, change of consistency, local and upper aerodigestive tract symptoms such as dysphonia, dysphagia, dyspnoea and associated cervical lymphadenopaties, and symptoms of hypo and/or hyperthyroidism. Past medical history of dyshormogenesis, exposure to irradiation, multiple endocrine neoplasia (MEN) and family history of thyroid disorders including cancer should also be ascertained.

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Clinical examination

Physical examination. This should include a general examination looking for signs of hypo or hyperthyroidism, inspection and palpation of the neck, which is best performed standing behind the patient and a full upper aerodigestive tract examination. The clinical assessment of any respiratory distress caused by flexing the neck or by raising the arm is a very important aspect of the physical examination of patients with MNG.

Fibreoptic flexible nasendoscopy. The examination of the larynx is an essential investigation in all patients with thyroid nodules and especially in those presenting with associated upper aero-digestive tract symptoms or those undergoing surgery as this will allow an static as well as a dynamic assessment of the vocal cord movement. It will assist in the anatomical assessment of the larynx and upper trachea in those cases where the goitre has displaced the airway. This will also aid the planning of the anaesthetic technique at the time of surgery especially in those patients with large compressive goitres or those with retrosternal extension.

Biochemistry studies

Full Blood Count. A small proportion of patients with hypo or hyperthyroidism may develop anaemia and therefore it is important to identify them and treat them accordingly especially is surgery is indicated.

Thyroid function tests (TFT). In any patient with a suspected thyroid abnormality, the determination of the thyroid function is essential. A borderline or low thyroid-stimulating disorder (TSH) can occur in patients who are clinically euthyroid and are developing an autonomous thyroid nodule. It is not unusual to find completely suppressed levels of TSH with normal thyroxine (subclinical hyperthyroidism). It is advisable to check the free T3 levels as they may be elevated with a normal free T4 in cases of T3-Toxicosis.

Thyroid autoantibodies. Positive thyroid autoantibodies support the presence of thyroiditis as a cause of the increase in the size of the thyroid gland. They will also help to predict the possibility of hypothyroidism as a part of the natural history of their condition or following surgery.

Thyroglobulin. Thyroglobulin levels has no role in the initial investigation of patients with thyroid masses.

Calcitonin. Calcitonin has no role in the initial investigation of patients of thyroid masses. However, in patients with family history of medullary thyroid carcinoma or MEN should be included as initial investigation.

Cytology

Fine needle aspiration cytology (FNAC). FNAC is mandatory in the evaluation of STN and goitres with a dominant nodule. It is also essential in those patients where malignancy is suspected, such as nodular goitres exhibiting rapid growth, a hard texture or those in which there is vocal cord paralysis or dysphagia. In nodular goitres sampling errors occur most frequently with very small (<1cm) or large (>4cm) nodules. Also, if the nodules are haemorrhagic or cystic, there is an increased incidence of false negatives. These errors can be minimized if ultrasound is used to guide FNAC. We recommend that FNAC is done under ultrasound guidance for increased accuracy. The cytological analysis will provide a diagnostic indication as to the probable nature of the nodule.

If the aspirate contains colloid and histiocytes only in the absence of epithelial cells, the Thy 1 category should be clearly identified as cyst. In this case if the cyst has been completely aspirated with no residual palpable mass, the patient can be followed in the clinic an FNAC is performed if the cyst recurs.

All Thy 3 aspirates should be discussed in the MDM and usually a diagnostic lobectomy is required as the risk of malignancy is around 20%. It has been suggested that Thy 3 aspirates could be further sub-classified into Thy 3a and Thy 3b. In Thy 3a aspirates the risk of malignancy is about 29% and therefore a diagnostic lobectomy is always indicated. In Thy 3b aspirates, that risk is less than 10% and not all patients may require a lobectomy.

Fig.1 Management of thyroid nodules according to diagnostic cytology category using the Thy Classification by the British Thyroid Association.

Diagnostic Category	Description	Action
Thy 1	Non-diagnostic	Repeat FNAC
Thy 2	Non-neoplastic (Benign)	Repeat FNAC in 3-6 months to exclude neoplasia
Thy 3	Follicular lesion	Diagnostic lobectomy
Thy 4	Suspicious of malignancy	Surgical intervention
Thy 5	Diagnostic of malignancy	Surgical intervention

Core Needle Biopsy. The examination of the larynx is an essential investigation in all patients with thyroid nodules and especially in those presenting with associated upper aero-digestive tract symptoms or those undergoing surgery as this will allow an static as well as a dynamic assessment of the vocal cord movement. It will assist in the anatomical assessment of the larynx and upper trachea in those cases where the goitre has displaced the airway. This will also aid the planning of the anaesthetic technique at the time of surgery especially in those patients with large compressive goitres or those with retrosternal extension.

Imaging studies

Chest radiograph. Chest x-ray is often requested in the initial evaluation of nodular goitres in general practice. These may indicate the degree of retrosternal extension, the deviation of the trachea and other potential pulmonary abnormalities. However, they should be always supplemented by other imaging studies such as computed axial tomography (CT) or magnetic resonance imaging (MRI).

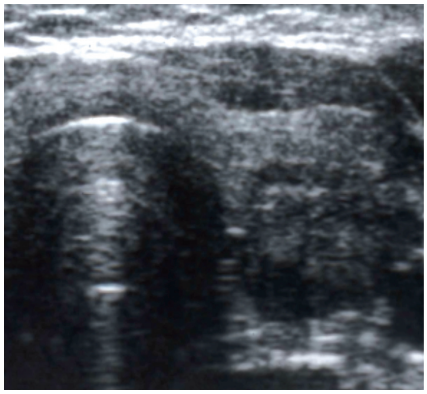

Fig.2 Ultrasound scan of the left thyroid lobe showing a nodule with microcalcification often indicative of carcinoma.

Ultrasound scanning. Ultrasound is a safe, non-invasive and cost effective investigation in the evaluation of thyroid masses. It will give the exact number, size and characteristics of nodules. It can differentiate between solid and cystic lesions and it will also detect nodules that are not clinically palpable and cervical lymphadenopathy. Features

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suggestive of malignancy are hypoechogenicity, irregular margins, absence of through transmission, micro-calcification and nodule size greater than 3cm. It can assess the extent of thyroid enlargement but cannot assess any retrosternal extension. Ultrasound will assist in percutaneous drainage or FNAC, very efficiently decreasing sampling errors and increasing the accuracy of the diagnosis. It will also assist in follow-up, as the size of the nodules can be objectively measured and exact comparisons made. However on it own they have very little diagnostic value and therefore are not recommended.

Nuclear medicine scintigraphy. Radioisotope studies will provide physiological information about the goitre. It will detect nodules which function autonomously and which are not suppressible. At the same time it can assist in detecting those non-functioning areas that may need cytological evaluation. 99mTc Pertechnetate scans (99MTc) are often employed as they may be completed within 20 minutes of injection and provide comparable information at much lower cost to 123I Iodine scans. Areas of uptake indicate functioning tissue and nodular areas of increased uptake identify regions of the thyroid, which are starting to function autonomously. In patients developing autonomous nodules, non-functioning areas may also be due to functional suppression of normal tissue with the fall in TSH.

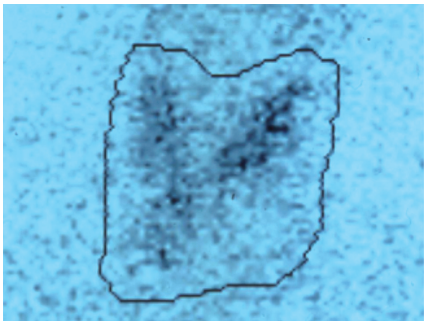

Fig.3 99mTc scan of the thyroid gland showing bilateral 'cold' areas. In this case the large palpable lesion the FNAC was non-diagnostic but the FNAC of the smaller 'cold' area, was highly suggestive of papillary thyroid carcinoma.

Computed Axial Tomography (CT). CT scanning is valuable in the evaluation of large cervical goitres with compression symptoms, in those goitres with retrosternal extension and where malignancy is present or suspected. The assessment of the size of the thyroid mass, the length of the retrosternal or intrathoracic component and its relationship with the trachea, oesophagus and great vessels of neck and mediastinum are mandatory prior to surgery. At the same time, CT scanning will provide information that may indicate malignancy such as extracapsular extension, intra-nodular calcification, the presence of enlarged cervical or mediastinal lymph nodes or invasion into adjacent structures. CT is favoured over MRI by most centres on cost grounds. CT scanning often uses intravenous iodine based contrasts and clinicians should be aware that, it may interfere with subsequent radioiodine ablation should be patients have differentiated thyroid cancer.

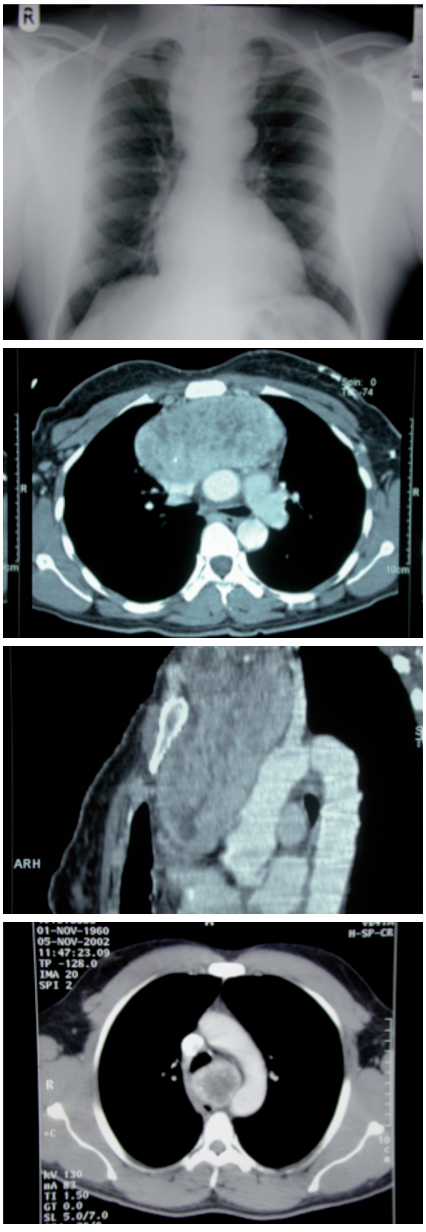

Fig.4 CXR, axial and sagittal CT scans of a patient with a giant retrosternal goitre with extension beyond the aortic arch.

Magnetic Resonance Scanning. MRI scanning is and excellent investigation for staging thyroid cancer and assessing the stage of metastatic lymphadenopathy as it does not require iodine base contrast and provides multiplanar views.

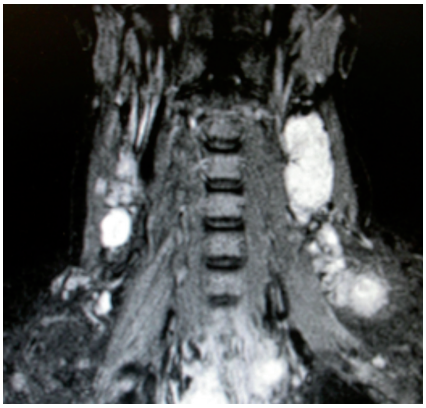

Fig.5 MRI scan of a patient with extensive lymphadenopathy from a papillary thyroid carcinoma.

Pulmonary function tests

Flow volume loops. These may be useful in evaluating large substernal goitres and quantify the degree of airway obstruction.

Multidisciplinary Assessment

Multidisciplinary thyroid team meetings are now well established as a part of the management of patients with thyroid nodules and suspected cancer. The multidisciplinary thyroid core team members should include: Endocrine and head and neck surgeons, endocrinologists, nuclear medicine physicians, clinical oncologists, radiologists, cytologists, hystopathologists and clinical nurse specialists. All cases of Thy 1, 3, 4 and 5 thyroid nodules should be discussed in a weekly multidisciplinary thyroid meeting, a management strategy agreed and documented and the general practitioner informed. All new cancer diagnoses, recurrent cancers and difficult diagnoses should also be discussed and the management strategy agreed. We also discuss all difficult diagnosis and also those patients that despite benign cytology may exhibit suspicious clinical features (1, 11).

Investigations for a given clinical presentation

Solitary thyroid nodule

Patients presenting with a STN should be investigated with TFT, thyroid autoantibodies, and ultrasound guided FNAC. USS/FNAC are done the same day and patients are seen for review in the clinic, where the management decision is made and discussed with the patient. 99mTc04 scans

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are performed if the TFT suggests hyperthyroidism. If two consecutive USS/FNAC are non-diagnostic an USS/CNB is considered.

Goitres without compression symptoms

These patients are investigated with TFT, thyroid autoantibodies, ultrasound guided FNAC. 99mTc04 scans are performed if the TFT suggest hyperthyroidism. In addition pulmonary multi-slice CT scans and pulmonary function tests. This allows patients to be fully evaluated regarding the potential underlying thyroid pathology and to plan the extent of surgery at the second outpatient visit.

Patients with diffuse goitres

These patients are likely to have either thyrotoxicosis or thyroiditis. TFT, thyroid autoantibodies and ultrasound are indicated. If the USS shows thyroid nodules, a FNAC is performed. 99mTc04 scans are performed if the TFT suggest hyperthyroidism.

Lateral neck masses

Patients presenting with lateral neck masses and in which a thyroid gland origin is suspected, should be investigated with TFT, thyroid autoantibodies, and ultrasound guided FNAC. A thorough ultrasound examination of the neck and thyroid is performed and any suspicious thyroid nodules or lymphadenopathies undergo FNAC. If two consecutive USS/FNAC are non-diagnostic an USS/CNB is considered.

Conclusion

Patients with thyroid pathology present to the head and neck lump clinics in a variety of clinical scenarios. They should be investigated following guidelines agreed by local multidisciplinary teams, which in turn have been adapted from national guidance. All patients presenting with thyroid nodules or goitres should at least have TFT, thyroid autoantibodies and ultrasound guided FNAC as a part of their initial assessment. Although controversy exist regarding the value of certain investigations part of the initial workup of these patients , the experience of individual units, patients' investigation pathways, government target pathways and cost-effective strategies should be taken in to consideration when investigating patients with thyroid nodules or masses.

Who we are

London ENT Surgeons is a partnership of six consultants covering all aspects of Ear, Nose and Throat problems in adults and children. In addition the group also specialises in Facial Plastics and Reconstructive Surgery.

We are all based in local NHS teaching hospitals (Guy's, St Thomas' and Lewisham) and also provide services to the local district hospitals (Queen Elizabeth, Woolwich and Queen Mary, Sidcup).

We are available for private consultations at the following hospitals and clinics:

- **Blackheath Hospital**
- **London Bridge Hospital**
- **The Sloane Hospital**
- **Harley Street**
- **Syon Clinic, Brentford**
- **31 Old Broad Street**
- **Sevenoaks Medical Centre**
- **City of London Medical Centre**
- **St Johns and St Elizabeth's**
- **Lister Hospital**

Consultant specialities

All our consultants deal with general ENT problems but also have areas of special interest. The consultant team is supported by a practice manager and five secretaries.

Mr A Aymat
Voice problems, adult and paediatric otology.

Mr T Jacob
Paediatric ENT, salivary gland and thyroid surgery.

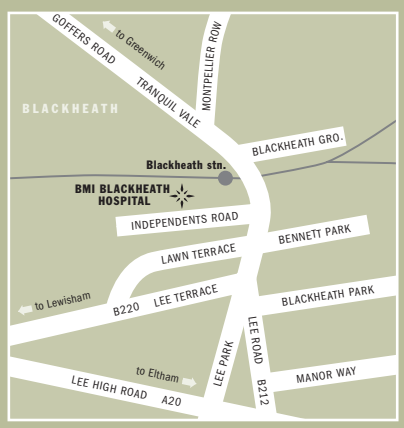
Mr D Bowdler
Adult and paediatric otology, dizziness, vertigo and tinnitus.

Mr N Salama
Rhinology, snoring, sinus disease and allergies.

Mr D'Souza
Facial plastics and reconstructive surgery including facial skin cancer.

Mr R Simo
Head and neck oncological surgery, thyroid and salivary gland surgery.

How to find us (main office)



MAIN OFFICE
10 Independents Road
Blackheath SE3 9LF

T 020 8297 4774
F 020 8297 4775
E secretary@londonentsurgeons.co.uk
www.londonentsurgeons.co.uk

Designed and printed by Artbase2 | 01959 574 499 | www.artbase2.co.uk