

Neoplasms of the thyroid

Classification of thyroid neoplasms:-

Benign tumours

Follicular adenoma

Malignant tumours of the thyroid can be classified as :

Primary

- 1) Follicular epithelium differentiated.
 - Papillary 60% & Follicular 20%
- 2) Follicular epithelium undifferentiated
 - anaplastic 10%
- 3) Para follicular cells
 - Medullary 5%
- 4) Lymphoid cells
 - Malignant lymphoma 5%

Secondary

- Metastases
- Local infiltration

Benign tumours

Follicular adenomas present as clinically solitary nodules and the distinction between a follicular carcinoma and an adenoma can only be made by histological examination: in the adenoma there is no invasion of the capsule or of pericapsular blood vessels.

Treatment is, therefore, by wide excision —preferably a lobectomy. The remaining thyroid tissue is normal so that prolonged follow up is unnecessary. It is doubtful whether there is such an entity as a papillary adenoma and all papillary tumours should be considered as malignant even if encapsulated.

Malignant tumours

The vast majority of primary growths is carcinomas. Dunhill classified them histologically as differentiated and undifferentiated: and the differentiated carcinomas are now subdivided into follicular and papillary. Secondary growths are rare but blood-borne

metastases occur .Blood borne metastases more usually occur from primary carcinomas of breast, colon and kidney and from melanomas.

Aetiology of malignant thyroid tumours

- **Papillary**, frequently follows accidental irradiation of the thyroid in childhood.
- The incidence of **follicular** carcinoma is high in endemic goitrous areas, possibly owing to TSH stimulation.
- **Malignant lymphomas** can present in a patient known to have autoimmune thyroiditis, so that the lymphocytic infiltration in the autoimmune process may be an aetiological factor. Indeed, it is likely that all lymphomas of the thyroid arise in glands affected by such thyroiditis.

Clinical features of thyroid neoplasms

- ✚ **thyroid swelling** is the commonest presenting symptom.
- ✚ **Enlarged cervical lymph nodes** may be the presentation of papillary carcinoma.
- ✚ **Recurrent laryngeal nerve paralysis** may be a presenting feature of locally advanced disease.
- ✚ **Anaplastic growths** are usually hard, irregular and infiltrating. A differentiated carcinoma may be suspiciously firm and irregular, but is often indistinguishable from a benign swelling.
- ✚ Small papillary tumours may be impalpable (occult carcinoma) — even when lymphatic metastases are present (so-called lateral aberrant thyroid).
- ✚ **Pain**, often referred to the ear, is frequent in infiltrating growths.

Diagnosis of thyroid neoplasms

- ✚ Diagnosis is obvious on **clinical examination** in most cases of anaplastic carcinoma, although Riedel's thyroiditis is indistinguishable. It is not always easy to exclude a carcinoma in a multinodular goitre, and solitary nodules, particularly in the young male, are always suspect.
- ✚ **Failure to take up radio-iodine** is characteristic of almost all thyroid carcinomas but occurs also in degenerating nodules and all forms of thyroiditis.
- ✚ **Thyroid antibody** titres are often raised in carcinoma.
- ✚ **FNAC**
- ✚ Exploration with excision in the form of **lobectomy** is essential when in doubt. Incisional biopsy may cause seeding of cells and local recurrence, and is most inadvisable in a resectable carcinoma. In an anaplastic and obviously irremovable carcinoma, however, incisional or needle biopsy is justified.

Papillary carcinoma

Most papillary tumours contain a mixture of papillary and colloid-filled follicles, and in some the follicular structure predominates. Nevertheless, if any papillary structure is present, the tumour will behave in a predictable fashion as a papillary carcinoma. Histologically the tumour shows papillary projections and characteristic pale, empty nuclei. Papillary carcinomas are very seldom encapsulated. Multiple foci may occur in the same lobe as the primary tumour or, less commonly, in both lobes. They may be due to lymphatic spread in the rich intrathyroidal lymph plexus, or to multicentric growth.

Spread to the lymph nodes is common but blood-borne metastases are unusual unless the tumour is extrathyroidal. The term extrathyroidal indicates that the primary tumour has infiltrated through the capsule of the thyroid gland.

Occult carcinoma

Papillary carcinoma may present as an enlarged lymph node in the jugular chain with no palpable abnormality of the thyroid. The primary tumour may be no more than a few millimetres in size and is termed occult. Such primary foci of papillary carcinoma may also be discovered in thyroid tissue resected for other reasons, e.g. Graves’ disease. The term occult is now applied to all papillary carcinomas less than 1.5 cm in diameter. These have an excellent prognosis and are regarded as of little clinical significance.

Follicular carcinoma

These appear to be macroscopically encapsulated but microscopically there is invasion of the capsule and of the vascular spaces in the capsular region. Multiple foci are seldom seen and lymph node involvement is much less common than in papillary carcinoma. Blood-borne metastases are almost twice as common and the eventual mortality rate is twice as high.

Hurthle cell tumours are a variant of follicular neoplasm in which oxyphil (Hurthle, Askanazy) cells predominate histologically. It is doubtful whether Hurthle cell neoplasms are ever benign and they may be associated with a poorer prognosis.

- **The differences between follicular & papillary thyroid CA.**

Follicular	Papillary
Macroscopically encapsulated	Not
Multifoci seldom seen	Common
Blood born metastases is more common	Lymphatic metastases is more common
Mortality rate is twice common	Less
Male incidence is more	Less
Recurrence rate is more	Less
Distant metastases is more	
	Nodal metastasis is more
	Local recurrence is more
Mainly occur in endemic goiter	Usually follows irradiation of the neck during child hood.

Prognosis in differentiated thyroid carcinoma

It depend on:

- ✚ histological type,
- ✚ Age,
- ✚ The presence of extrathyroidal spread or major capsular transgression (in follicular carcinoma), and
- ✚ The size of the tumour.
 - ❖ On the basis of age, tumour spread, size and histology, these allow separation of patients into low-and high-risk groups with 25-year mortality rates of 2 per cent and 46 per cent, respectively.
 - ❖ With regard to age, the prognosis is much worse in males over the age of 40 years and in females over 50 years.
 - ❖ Distant metastatic disease is obviously an adverse prognostic factor but lymph node metastases are not associated with worse prognosis.
 - ❖ Patients in the low-risk group account for 90 per cent of cases of differentiated thyroid carcinoma.

Surgical treatment

For differentiated thyroid CA (papillary and follicular), we do total thyroidectomy with removal of the clinically obvious lymph nodes in the pretrachial, paratrachial and along the jugular chain.

If the jugular chain is extensively involved, we do modified neck dissection with preservation of the accessory nerve and sternomastoid muscles.

Very occasionally it may be necessary to scarify the recurrent laryngeal nerve if it is completely encircled, and more rarely resection of part of the trachea when involved by extra thyroidal spread.

There is also the option of lobectomy with isthmusectomy in differentiated thyroid CA, with the total thyroidectomy preserved for

- 1) Bilateral disease.
- 2) High risk group

Additional measures

Thyroxine

It is standard practice to prescribe thyroxine in a dose of 0.1—0.2 mg daily, to suppress endogenous TSH production, for all patients after operation for differentiated thyroid carcinoma on the basis that some tumours are TSH dependent. Suppression of the TSH level should be confirmed by TSH measurement. Failure of suppression to a level of <0.1 i.t/litre may indicate an inadequate dose of thyroxine or more usually that the patient is noncompliant.

Undifferentiated (anaplastic) carcinoma

This occurs mainly in elderly. Local infiltration is an early feature of these tumours with spread by lymphatics and by the bloodstream. They are extremely lethal tumours and survival for more than 1—2 years after presentation is most unusual. In most cases death occurs within months rather than within years.

Treatment

- ✚ An attempt at curative resection is only justified if there is no infiltration through the thyroid capsule and no evidence of metastases.
- ✚ Many of these aggressive lesions present in an advanced stage with tracheal obstruction and require urgent tracheal decompression. The trachea may be decompressed and tissue obtained for histology by isthmusectomy.
- ✚ Tracheostomy is best avoided.
- ✚ Radiotherapy should be given in all cases and may provide a worthwhile period of palliation as may combination chemotherapy [including doxorubicin (Adriamycin)].

Medullary carcinoma

These are tumours of the parafollicular (C)-cells derived from the neural crest and not from the cells of the thyroid follicle as are other primary thyroid carcinomas. There is a characteristic amyloid stroma. High levels of serum calcitonin (>0.08 ng/ml) are produced by many medullary tumours. These levels fall after resection of a tumour and will rise again if the tumour recurs. This is a valuable tumour marker in the follow-up of patients with this disease. Diarrhoea is a feature in 30 per cent of cases and this may be due to 5-hydroxytryptamine or prostaglandins produced by the tumour cells.

Some tumours are familial and may account for 10—20 per cent of all cases. Medullary carcinoma may occur in combination with adrenal pheochromocytoma and hyperplastic hyperparathyroidism in the syndrome known as multiple endocrine neoplasia type IIa (MEN IIa). The familial form of the disease frequently affects children and young adults whereas the sporadic cases occur at any age with no sex predominance. When the familial form is associated with prominent mucosal neuromas involving the lips, tongue and inner aspect of the eyelids, with occasionally a Marfanoid habitus, the syndrome is referred to as MEN type IIb.

Involvement of lymph nodes occurs in 50—60 per cent of cases of medullary carcinoma and blood-borne metastases are common. As would be expected, tumours are not hormone dependent and do not take up radioactive iodine. Life expectancy is excellent if the tumour is confined to the thyroid gland, good as long as metastases are confined to the cervical lymph nodes and poor once blood-borne metastases are present.

Treatment

Total thyroidectomy is the treatment of choice because of high incidence of multicentricity, the more aggressive course and because I131 therapy is not usually effective.

In addition to total thyroidectomy, bilateral central neck dissection should be routinely performed.

If the patient has palpable cervical lymph nodes or if the central neck nodes involved, we do ipsilateral or bilateral radical neck dissection.

Also, if the tumour is > 1.5cm, the patient should undergo ipsilateral prophylactic modified radical neck dissection because 60% of these patients have nodal metastases.

Malignant lymphoma

- ✦ Response to irradiation is good and radical surgery is unnecessary once the diagnosis is established by biopsy.
- ✦ FNAC usually provides insufficient material and large-needle (Trucut) or open biopsy is usually necessary.
- ✦ In patients with tracheal compression, isthmusectomy is the most appropriate form of biopsy.
- ✦ The prognosis is good if there is no involvement of cervical lymph nodes.
- ✦ Rarely the tumour is part of widespread malignant lymphoma disease, and the prognosis in these cases is worse.