Follicular carcinoma thyroid

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Introduction

THYROID CARCINOMAS are for simplicity classified as benign and malignant tumours. The benign tumours are essentially adenomas and the malignant tumours of the thyroid are the papillary, follicular, medullary and the anaplastic carcinomas[1]. The papillary carcinomas are the more common tumours and they are usually seen in the younger age group with good prognosis — 60% survival in 10 years[2]. At the end of the spectrum of thyroid malignancies are the anaplastic carcinomas, seen usually in patients above 60 years of age and have a 10-year survival of 1%, though Gramer and Buckwater found a 10-year survival rate of 15%, based on a study of 59 patients [3].

In the middle of the spectrum are the follicular carcinomas, which are three times as frequent in women than in men and is seen around middle and later age groups [4]. Macroscopically, the neoplasm varies in size, from 1 cm. to 15 cm [4]. The tumour may take the form of a single nodule or of a mass of conglomerate nodules. Follicular carcinomas tend to invade adjacent structures and metastasize by blood stream, rather than to local lymph nodes. Histologically, these tumours are characterised by its tendency to form acinar structure with varying colloid content and the conspicuous absence of any papillary growth pattern. The degree of differentiation varies greatly amongst different neoplasms and sometimes to a considerable extent in different parts of the same tumour. Secondary changes, like cystic degeneration, haemorrhage, irregular fibrosis and calcification, are common. This tumour has a tendency to encapsulation, but there is usually penetration of the capsule by the groups of cancer cells.

The follicular carcinomas are unique in that the first presenting sign may be due to a skeletal deposit, the primary tumour being small and impalpable. Skeletal metastases from follicular carcinomas have been reported in the skull, sternum, long bones, pelvis and the ribs. Lung metastases are sometimes seen in this group of tumours. The bony and pulmonary metastases are highly vascular

and are sometimes pulsatile and Pierce [5] has described a case of follicular carcinoma with multiple pulmonary metastases which presented with the sign and symptoms of a large arterio-venous shunt. The bone secondaries are usually osteolytic and sometimes may be osteoblastic [6]. Rarely, metastases from a well-differentiated follicular carcinoma may secrete enough thyroxine to cause symptoms of hyperthyroidism. In this group of cases, the majority of metastases were found in bone or lung [7].

The prognosis in this type of tumour is less favourable than for papillary, but Woolner [4] found that the prognosis depended on the histological grade of the tumour and the degree of invasiveness and patients with highly differentiated follicular carcinomas might survive for long periods even in the presence of skeletal metastases, whereas growths of average grade of malignancy with marked local invasive tendencies had a 10-year survival rate of about 44%.

We are presenting this patient as an interesting case of follicular carcinoma of the thyroid, both because of its unique mode of presentation and the treatment that we are carrying out.

Fig. 1a: Sternal mass. Note the operation mark at the base of the neck.

Case History

Male, Indian patient, of 46 years of age, presented with history of tremors, palpitation and swelling in the front of the neck for the past one year. His resting pulse was 100-110/mt. On examination at that time, both the left and the pyramidal lobes of the thyroid was enlarged, and a firm swelling in the retrosternal region was seen. He was put on antithyroid drugs, but after a month, no improvement was noticed in his symptoms. He was then considered for surgery. On the operation table, both the lobe and the pyramidal lobe of the thyroid were enlarged and firm. There was a definite swelling over the sternum, which was separated from the thyroid swelling. The pyramidal lobe was slightly firmer in the pretracheal region and because of this suspicion of malignancy, a complete subtotal thyroidectomy was done, leaving only $\frac{1}{8}$th. of each gland behind.

Histology of the thyroid gland was reported as suspicious of malignancy, though the lesion showed no definite evidence of malignancy.

Post-operatively, it was noticed that his sternal

Fig. 1b: Scintiscan of neck and sternum following tracer dose of I 131. Arrow shows slight activity in the (L) lobe thyroid. Sternal lump shows good iodine uptake.

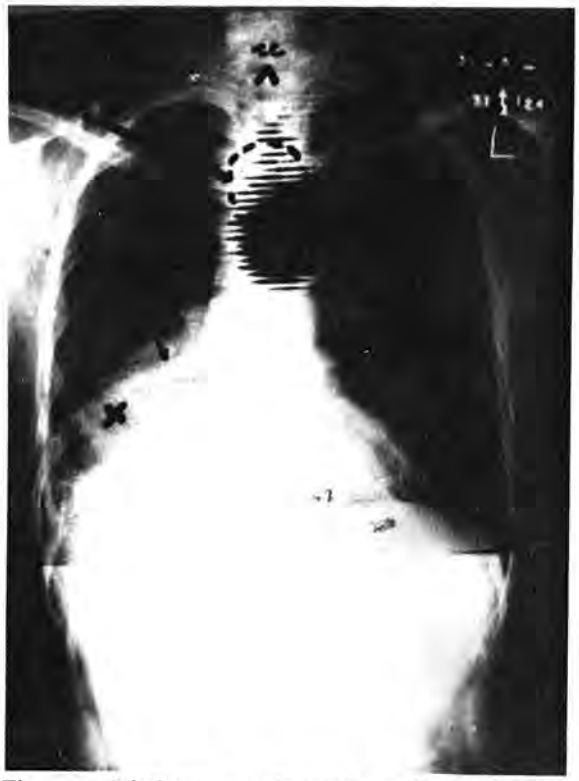

Fig. 1c: Scintiscan superimposed on X-ray of chest. The lump is seen at the sterno-clavicular junction and extends downwards.

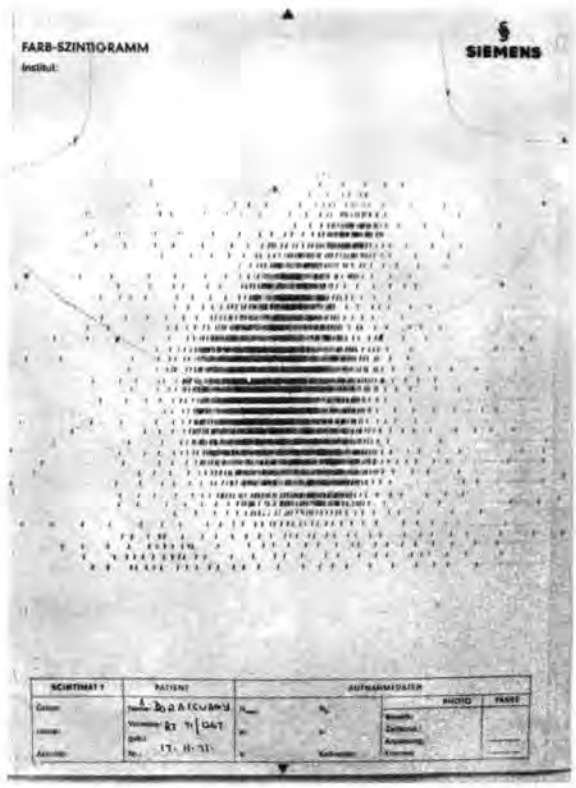

Fig. 2: Scintiscan of sternum four months after ablative dose of radioiodine. The mass appears smaller.

swelling was growing bigger in size and was provisionally thought to be an osteoclastoma. However, radioiodine studies were done on him (approximately one year after the subtotal thyroidectomy). These showed that there was slight activity over the left side of the neck and the sternal mass took up iodine well, suggesting that it was of thyroid in origin. Drill biopsy of the sternal mass was done and it was conclusively proven to be follicular carcinoma thyroid.

As the mass was taking up iodine well, it was decided to treat him with doses of radioiodine. He was given 150 cm C of I^{131} in June 1971 and a repeat scintiscan of the neck and sternum in November showed that the mass had grown smaller. It was decided that he would be given a number of courses of radioiodine at intervals of two to three months, with replacement therapy, in between the therapy interval. The patient is doing well with this treatment.

Discussion

Follicular carcinoma of the thyroid are well known for their bizzare presentation. In this patient, the mass in the sternum was thought to be an osterclastoma and separate from the primary thyroid tumour. However, radioiodine studies and drill biopsy proved beyond doubt that the mass was thyroidal in origin. The follicular carcinomas are also interesting in that, amongst the group of thyroid malignancies, they show the highest incidence and degree of initial radioiodine uptake while mixed follicular-papillary, anaplastic and other types of carcinoma show decreasing initial uptake in that order. This fact makes it an ideal tumour for treatment with radioiodine. The choice of therapy varies from centre to centre, but it is now accepted that follicular carcinomas should have total thyroidectomy followed by radioiodine. The first total dose of radioiodine varies from centre to centre (from 100m C to 600m C), but we decided on 150m C. The interval between successive treatment varies, depending on the size of the tumour.

It has been shown that the uptake in the tumour is seldom more than 15% at first therapy dose, and as that tumour regresses with successive doses, the radioiodine uptake is reduced, perhaps by as much as 90% each time. When the uptake

Fig. 3: Scintiscan of spine showing uptake in thoracic 10 vertabrae.

has been reduced to 0.01% [8] and no residual tumour can be detected clinically, it is then reasonable to assume that all the tumour has been destroyed. One of the objections to this type of massive radioiodine therapy is the complication of leukemia. This is a serious complication and there are 11 published reports in literature. In Poochin's series of 192 patients treated with radioiodine, there was a 2% risk! However, this is a small proportion and it is not definitely sure whether leukemia was due to radiation therapy [9].

It has been reported that rarely metastases from follicular carcinoma could present with symptoms of thyrotoxicosis. This patient, when first seen, had symptoms of hyperthyroidism, which did not respond to anti-thyroid drugs. However, the patient was not well investigated before surgery rnd radioiodine therapy and we are unable to confirm this.

Lastly, we have on our follow-up a few other cases of thyroid carcinomas on radioiodine therapy and we hope to publish them at a later date, when we have a large enough series.

Summary

A case of follicular carcinoma thyroid with metastases in the sternum, which has responded well to initial radioiodine therapy. We feel that this metastases was probably secreting excess thyroxine, but we are unable to substantiate this statement.

Addendum

Since the documentation of this case report, the patient came for follow-up in January 1972. At this time, he complained of pain over the spine and an X-ray of the thoraco-lumbar spine showed collapse and destruction of 10th thoracic vertebrae. Scintiscan of the spine, following tracer dose of I^{131}, showed good uptake and activity over the thoracic 10 level, suggesting that it was secondary from the follicular carcinoma.

(Fig. 3). Because of the location of the secondary and the potential danger of sudden cord compression, we decided to treat the secondary with external radiation up to 5500r.

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