Virchows Arch [Pathol Anat] (1984) 404:99–103

*Virchows Archiv A*


*Case report*

# Adenolipoma (Thyrolipoma) of the thyroid gland Report of two cases and review of literature *

**Sören Schröder,[1] Werner Böcker,[1] Helmut Hüsselmann,[2] and Henning Dralle [1]**

[1] Institut für Pathologie der Universität Hamburg, Martinistrasse 52, D-2000 Hamburg 20,
[2] Institut für Pathologie, Allgemeines Krankenhaus Hamburg-Harburg, Federal Republic of Germany

**Summary.** Rare fat cell-containing adenomas (adenolipomas) found in the thyroid gland of two patients are presented. Previously documented cases are reviewed. An origin from embryonic rests for these tumours as for diffuse lipomatosis of the thyroid is discussed.

**Key words:** Thyroid – Adenolipoma – Thyrolipoma – Choristoma

Adenolipoma of the thyroid, also called thyrolipoma according to Allen (1981) is an extremely rare neoplasm: only three definite cases have so far been described (Dhayagude 1942; Willis 1958; Trites 1966). By its well circumscribed appearance, adenolipoma appears to differ from diffuse lipomatosis of the thyroid, of which four cases have been reported (Simard 1954; Chesky et al. 1953; Dalforno and Donna 1969; Asirwatham et al. 1979) and also from the adipose tissue often found in amyloid goitres (Pich 1938; Walker 1942; Fuller 1950).

A review of surgical specimens at the University Hospital Eppendorf (UKE) and the General Hospital Harburg (AKH), Hamburg, revealed two patients with adenolipomas of the thyroid (Cases 1 and 2). Both tumours presented clinically as cold nodules.

## Case 1

K.O., a 50 year old man, was first treated at the UKE for oesophago-tracheal fistula following radiation therapy of oesophageal carcinoma. Computed tomography of the neck and chest showed a sharply defined nodule approximately 5 cm in diameter in the right thyroid lobe having the same density as adipose tissue. Subsequent radioactive scintiscan displayed no iodine uptake in this area. Three days later, right thyroid lobectomy and the implantation of a myopectoral flap between oesophagus and trachea were performed. In spite of two addi-

* Sponsored by the Hamburger Stiftung zur Förderung der Krebsbekämpfung

*Offprint requests to:* S. Schröder at the above address

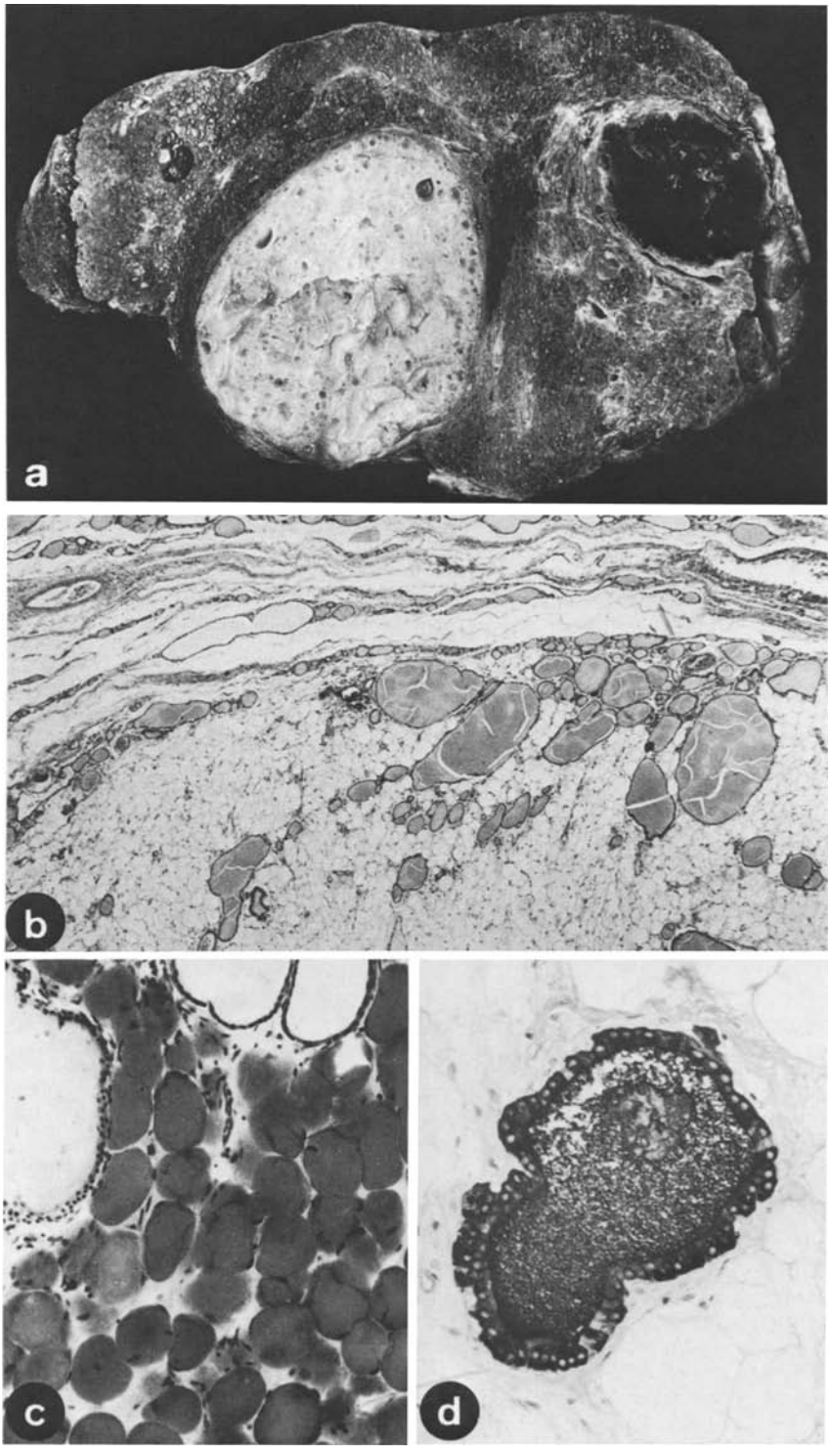


**Fig. 1 a–d.** Thyrolipoma (Case 1). **a** Gross specimen of right thyroid lobe showing thyrolipoma and microfollicular adenoma. **b** Low power magnification of thyrolipoma delineated by a tender fibrous capsule (H & E, ×29). **c** Mature fat cells ("adipocytes") of the thyrolipoma. Intensive reaction for fat is visible (Sudan IV, ×115). **d** Intensive cytoplasmic TG-positivity of thyroid follicles scattered between the adipose tissue (Thyroglobulin, ×220)

tional surgical interventions within 8 days, complete occlusion of the fistula could not be obtained. The patient died 14 days following first surgery from aspiration pneumonia. At autopsy no residues of oesophageal cancer or tumours or tumour-like lesions of other organs could be detected.

On cross sectioning, the specimen on the right thyroid lobe showed a soft, yellow, and lobulated nodule 4.5 cm in diameter completely defined by a delicate fibrous capsule in addition to a second encapsulated tumour of 2 cm in diameter with a parenchymatous aspect (Fig. 1 a). Histologically, about 90 per cent of the large tumour's mass consisted of mature fat cells divided into lobules by thin fibrous strands. Sparse follicular elements of medium size were found scattered between the adipose tissue (Fig. 1 b and c). The thyroid origin of the epithelial cells could be established by positive TG-immunostaining (Böcker et al. 1981) (Fig. 1 d). The smaller tumour proved histologically to be a typical microfollicular adenoma. Additional adipose tissue could not be demonstrated in this lesion nor in the remainder of the right thyroid lobe.

## Case 2

B.U., a 28 year old woman, reported that she had discovered a mass in the midline of her neck approximately 12 years previously. During the last 9 months, the mass began to grow. Thyroid scintiscan showed a cold nodule of the isthmus approximately 3 cm in diameter. The patient was admitted to AKH. Surgery was performed and the thyroid isthmus containing the tumour was removed. No further pathological abnormalities were found and the patient was discharged after an uneventful postoperative course of 5 days.

Macroscopically, the tumour measured 2.5 cm in diameter and had the appearance of a thyroid adenoma. On histological examination, about three quarters of the tumour's mass consisted of oxyphilic epithelial cells in microfollicular or trabecular pattern. Mature adipose tissue was scattered between the follicles. Only one ill-defined area in the center of the tumour showed a regional predominance of fat cells. Positive TG-immunohistochemistry gave evidence of the follicular origin of the epithelial cells. Invasion of the tumour capsule, of capsular blood vessels, papillae or other atypical features suggestive of malignancy were not detected.

## Discussion

The presence of adipose tissue in organs is frequently associated with parenchymal atrophy. It is commonly observed in parathyroid glands, thymus, salivary glands, pancreas, and breast (Weiland et al. 1978). As experience from autopsies shows, its presence in the thyroid gland is extremely rare and is neither related to involution nor to nutritional status. The occasional observation of small islands of adipose tissue in this organ has been attributed to their simultaneous inclusion with striated muscle in human thyroid gland during embryogenesis, prior to the development of the capsule (Meissner and Warren 1968). In rare instances fat cell inclusions are of considerable size and may present as a congenital goitre growing slowly during the first decade. Since these diffuse lipomatoses are most likely derived from displaced rests of embryonic structures, "choristomatous adiposity" is suggested as an appropriate term for such lesions.

Histologically, the five adenolipomas described by other authors (Dhayagude 1942; Willis 1958; Trites 1966) and seen in our material (Cases 1 and 2) are identical with diffuse lipomatosis. On the other hand, the capsule and the compression of surrounding thyroid parenchyma seen with adenolipomas are suggestive of an expanding proliferative process. A simultaneous

proliferation of both adipose tissue and parenchymal cells is also indicated by the association of "adipocytes" with oxyphilic follicular cells in one of our adenolipomas (Case 2) which were not seen in the remainder of the thyroid isthmus. A metaplastic origin of fat cells from stromal fibroblasts – as suggested for fat cells in amyloid goitres (Bettendorf et al. 1980) – seems less likely, since fibrosis or regressive changes were not seen with these two lesions. Thyrolipoma may therefore represent a mixed neoplasm of both indigenous epithelial and displaced mesenchymal elements.

In the differential diagnosis, an intrathyroidal adenolipoma deriving from a dislocated parathyroid gland was excluded by TG-immunohistochemistry, in both instances. It should be mentioned, however, that thyrolipoma was associated with thymolipoma and lipoma of the aryepiglottic fold in one patient reported by Trites (1966). The author noted that the thymus, parathyroid, and aryepiglottic fold all arise from the primitive foregut, so it would not be surprising that similar tumours may occur in these organs.

Both our patients proved to be in an euthyroid state. Lesions of this kind are apparently nonfunctional as opposed to rare instances of functioning parathyroid adenolipomas (Daroca et al. 1977) or symptomatic thymolipomas (Otto et al. 1982). Failure to find abnormalities in thyroid function tests is anticipated since, unless replacement of the thyroid with non-thyroid tissue is complete, one would not expect the development of hypothyroidism (Shimaoka et al. 1962).

## References

Allen PW (1981) Tumors and proliferations of adipose tissue. Masson Publishing, New York, p 79

Asirwatham JE, Barcos M, Shimaoka K (1979) Hamartomatous adiposity of thyroid gland. J Med 10:197–206

Bettendorf U, Herbst M, Frank K (1980) Seltene Formen der Lipomatosen am Beispiel der Schilddrüse, des Uterus und des Herzens. Zbl Allg Pathol Pathol Anat 124:507–516

Böcker W, Dralle H, Dorn G (1981) Thyroglobulin: An immunohistochemical marker in thyroid disease. In: DeLellis A (ed) Diagnostic immunohistochemistry. Masson Publishing, New York, pp 37–59

Chesky VE, Dreese WC, Hellwig CA (1953) Adenolipomatosis of the thyroid. Surgery 34:38–45

Dalforno S, Donna A (1969) Diffuse lipomatosis of the thyroid (Struma lipomatosis). Cancro 22:613–617

Daroca PJ, Landau RL, Reed RJ, Kappelman MD (1977) Functioning lipoadenoma of the parathyroid gland. Arch Pathol Lab Med 101:28–30

Dhayagude RG (1942) Massive fatty infiltration in colloid goiter. Arch Pathol 33:357–360

Fuller RH (1950) Hamartomatous adiposity with superimposed amyloidosis of thyroid gland. Am J Clin Pathol 20:188–189

Meissner WA, Warren S (1968) Tumors of the thyroid gland. Atlas of Tumor Pathology. 2nd series. Fasc 4. Armed Forces Institute of Pathology, Washington, DC, p 41

Otto HF, Löning Th, Lachenmayer L, Janzen RWCh, Gürtler KF, Fischer K (1982) Thymolipoma in association with myasthenia gravis. Cancer 50:1623–1628

Pich G (1938) Umschriebene Lipomatose der Schilddrüse. Frankfurter Z Pathol 52:538–546

Shimaoka K, Sokal JE, Pickren JW (1962) Metastatic neoplasms in the thyroid gland: pathological and clinical findings. Cancer 15:557–565

Simard LC (1954) Une nouvelle forme de goître: la scléro-lympho-lipomatose thyroidiènne. L'Union Méd Can 74:884–891
Trites AEW (1966) Thyrolipoma, thymolipoma and pharyngeal lipoma: A syndrome. Can Med Assoc J 95:1254–1259
Walker GA (1942) Amyloid goiter. Surg Gynecol Obst 75:374–378
Willis RA (1958) The borderland of embryology and pathology. Butterworth & Co., London, p 555

Accepted May 7, 1984