CONGENITAL TERATOMA OF THE THYROID GLAND

Report of a Case with a Review of the Literature

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We have been able to collect, in all, 43 reported cases of teratoma of the thyroid gland. Of these, 28 probably represent true examples of the condition, while the remaining 15, having been reported before the microscope came into general use, are more doubtful. The first case reported is certainly open to doubt. It is that of Grassi (1), who in 1691 described the removal of a completely developed fetus, the length of a finger, from a swelling in a woman's neck. On the other hand, the case described by Joube (2) in 1754 is quite probably a teratoma. In a tumor of an infant's neck so large that it caused dystocia, he found blood, bone, cartilage, and round hollow structures resembling loops of intestine. Similarly Morand (3) in 1766 found a tumor of the neck of a new-born infant which contained hair, a mass resembling a misshapen head, and another mass resembling loops of intestine.

Aside from these cases, there are found in the earlier literature, according to Hunziker (4), who has made a thorough analysis of the subject and from whose article these references are taken, 8 other cases, as follows. In 1834 Bury (5) described a large, chiefly right-sided tumor of the neck of a new-born infant, containing skin and bone. In 1839 Mondini (6) reported a case of a large tumor of the base of the neck, replacing the thyroid and receiving its blood supply from the superior and inferior thyroid arteries. Adelmann (7) in 1842 described a tumor of the neck in a new-born infant which contained serous cysts and cartilage. Gilles (8) in 1852 published an account of a cystic tumor of the neck which contained bone covered by periosteum and teeth. Hess (9) in 1854 described a case which was studied forty years later by Wetzel (10), and called by him a teratoma of the thyroid. This is the earliest of the more definite cases. In 1868 Boucher (11) gave a gross and microscopic description of a teratoma of the thyroid. Tannahill (12) in 1871 mentioned a partly cystic, partly solid tumor larger than a child's head occupying the region of the thyroid. This tumor contained bone and cartilage and was called by him a myxosarcoma. Houel (13) in 1873 described a congenital tumor of the thyroid region as large as a child's head, gelatinous, cystic, and with large numbers of cartilaginous areas.

In 1881 Vonwiller (14) described a congenital tumor of the neck as a mixed chondroma. His microscopic study is incomplete, however,

and it is possible that the tumor was a teratoma. Burghagen's (15) case, also, was incompletely studied, although fat, cartilage, and normal thyroid acini were found in the tumor. Zahn (16) in 1886 described a teratoma of the thyroid both grossly and microscopically. In 1888 Tansini (17) diagnosed as a papillomatous cystadenoma a large tumor in a seven-months fetus, which contained cartilage, mucus, and striated muscle. It is not improbable that this represents a teratoma. Billig (18) in 1892 described a large tumor replacing the thyroid, the tumor consisting of bone, cartilage and cystic spaces lined with epithelium of different varieties. In 1894 Schimmelbusch (19) reported the suc-

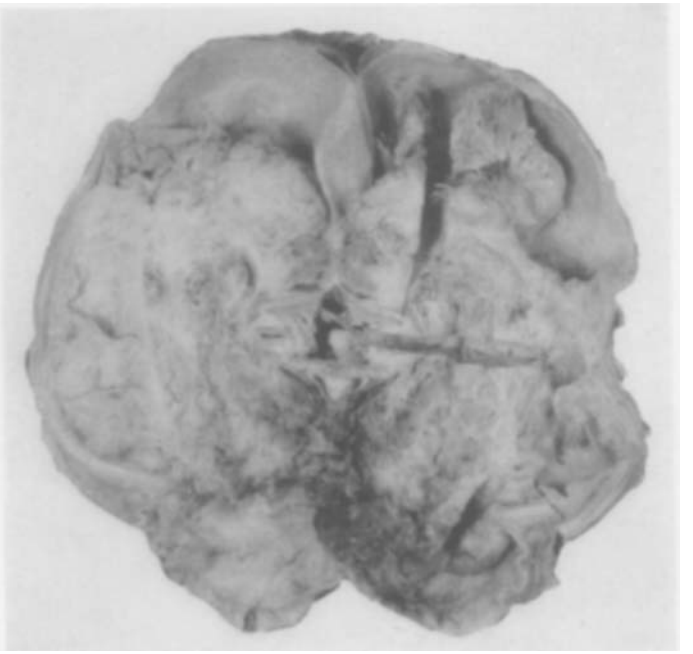

FIG. 1. TERATOMA OF THYROID GLAND: GROSS SPECIMEN BISECTED AND SPREAD APART, SHOWING THE PARTLY SOLID AND PARTLY CYSTIC NATURE OF THE TUMOR

It incompletely surrounds the larynx, which is seen in cross-section near the middle of the picture (posterior aspect of specimen).

cessful removal from the neck of an infant of a tumor which was diagnosed microscopically as teratoma of the thyroid. Schneider (20) in 1903 described a congenital cystic tumor of the thyroid containing cartilage, bone, smooth muscle, thyroid acini, and glands lined by cuboidal and flat epithelium.

More recent cases, supported by microscopic study, are those of Custer (21), Dorner (22), Hördemann (23), Van Rey (24), Schönberg (25), Ehlers (26), Fritzsche (27), Koerner (28), Pelligrini (29), Russell and Kennedy (30), Satanowsky (31), Tammann (32), Lurje (33), Poult (34), Gardner (35), Ribbert (36), Wetzel (10), Swoboda (37), Pupovac (38), Flesch and Winternitz (39), Herb (40), Kimura (41), and Colloridi (42), although one of the two cases reported by Flesch

and Winternitz is held by Ehlers (26) not to be a teratoma. Bell (43) in 1926 reported a case of premature delivery of a fetus presenting a tumor larger than a fetal head, arising from the thyroid. The tumor was firm, slightly elastic, and heterogeneous on section. The microscope revealed areas of cartilage, a tubular area, and embryonic tissue. While the pathological study is not complete, it is probable that this also is a teratoma. Also Hadda (44) reported the spontaneous full-term delivery of an infant showing a swelling of the left side of the neck larger than a man's fist. Because of difficulty in respiration, the swelling was aspirated, and 135 c.c. of clear fluid were withdrawn. It

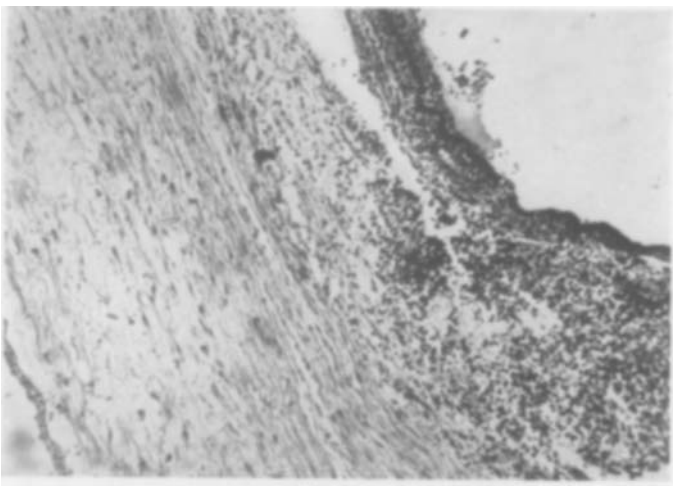

FIG. 2. CYST LINED WITH COLUMNAR EPITHELIUM, BORDERED BY A BROAD ZONE OF CELLULAR GLIAL TISSUE, WHICH IS CONTINUOUS WITH A BROAD ZONE OF WHARTONIAN JELLY BORDERED BY APPARENT AMNIOTIC EPITHELIUM

was necessary finally to extirpate the growth, which was found to have a pedicle about one-half as wide as a man's finger, apparently thyroid. Microscopic study revealed thyroid tissue, "central nervous system tissue," peripheral nerve fibers, muscle, connective tissue, and epithelium, portions of which were similar to ciliated epithelium.

Aside from the cases mentioned above, there are in the earlier obstetrical literature not infrequent reports of dystocia due to swelling of the neck of the fetus. These we have not included here because there is no evidence of the true nature of the swelling. We have also omitted a case reported by Spohn (45) in 1929, diagnosed only clinically.

Other cases, probably teratomatous in nature, have been omitted because the exact location of the tumor is not given in the report, and the relation to the thyroid is not definitely established.

REPORT OF CASE

The tumor which came to our attention presented characteristics essentially similar to previously reported cases of teratoma of the thyroid which were studied microscopically. It occurred in a 35 cm., approximately seven-months fetus weighing 1250 gm. Labor

lasted seventeen hours—the mother was a primipara [1]—and a Potter extraction was finally done. The fetus was stillborn. On gross examination there was found, in addition to the tumor to be described, a profuse hemorrhagic infiltration of the scalp together with

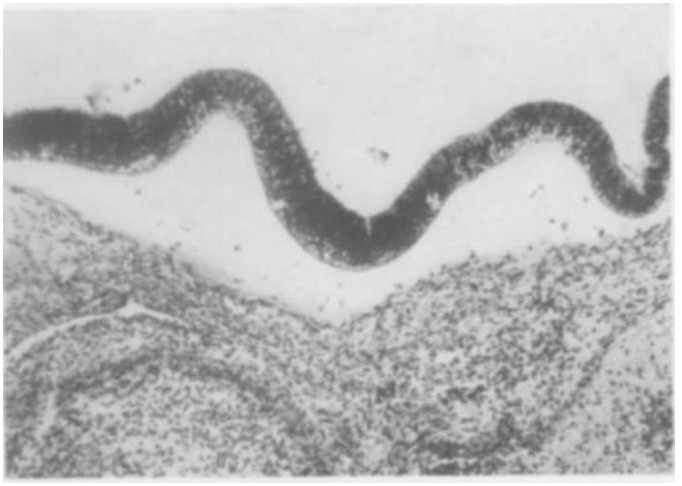

FIG. 3. RETINA-LIKE STRUCTURE, HERE SEPARATED FROM UNDERLYING CONNECTIVE-TISSUE STROMA, WHICH ALSO EMBRACES PORTIONS OF TWO NODULES OF GLIAL SUBSTANCE

tentorial lacerations and profuse subdural hemorrhage. The head measured 9 cm. in the occipito-frontal and 7 cm. in the bitemporal diameter.

The tumor consisted of an encapsulated, partly cystic, partly solid mass measuring 10 cm. in the lateral, 5 cm. in the vertical, and 6.5 cm. in the antero-posterior diameter, and distended the neck symmetrically, anteriorly and laterally. For the most part the mass lay just beneath the skin, but in some areas it was covered by the stretched fibers of the anterior and lateral cervical muscles. On dissection it was found to be identical with, or to have replaced, the thyroid gland. It was resting against the vertebral column and surrounded the larynx, trachea, lower pharynx, and esophagus except in their posterior portions. It was bordered by and extended posterior to both mastoid processes. Gross section, after partial fixation, revealed a partly solid, grayish-white structure, but yet one predominantly cystic. The solid portions varied in consistency, some areas being firm and others soft. In color they were grayish-white with here and there grayish-brown areas. The cysts varied from 1 mm. to 4.5 cm. in diameter and contained thin fluid. One was partly occupied by a mass of coagulated blood about 1 cm. in diameter. The weight of the specimen, partially collapsed, was 120 gm.

A complete autopsy revealed no metastases and no other abnormalities than those above noted.

Microscopic Description: The linings of the cystic portions of the tumor varied considerably in nature. Some were composed of tall columnar epithelium, others of cuboidal epithelium, or again of endothelium, while other cavities had a nondescript border of connective tissue or of cellular débris (possibly due to post-mortem exfoliation or desquamation and maceration). In many instances a single cyst had a variable lining, tall columnar epithelium merging gradually, as if by metaplasia, into cells of endothelial structure. A retina-like structure formed the surface of one compartment. In another instance an elongated cleft was lined with amniotic epithelium bordered by a broad zone of whartonian jelly embracing vascular structures and a narrow epithelial-lined tube—the structures of an umbilical cord.

Intermingled tissues of heterogeneous nature constituted the solid portions of the tumor. Cellular glial areas predominated, and many fields were strikingly similar to

[1] A patient on the Obstetrical Service of the Hospital Division of the Medical College of Virginia, to which department we are indebted for clinical information.

different types of gliomatous neoplasms—more particularly to astrocytomas, though there were many undoubted spongioblasts, groups indistinguishable from medulloblasts, and other inclusions of probable medullary epithelium. Gland-like groups of deeply pig-

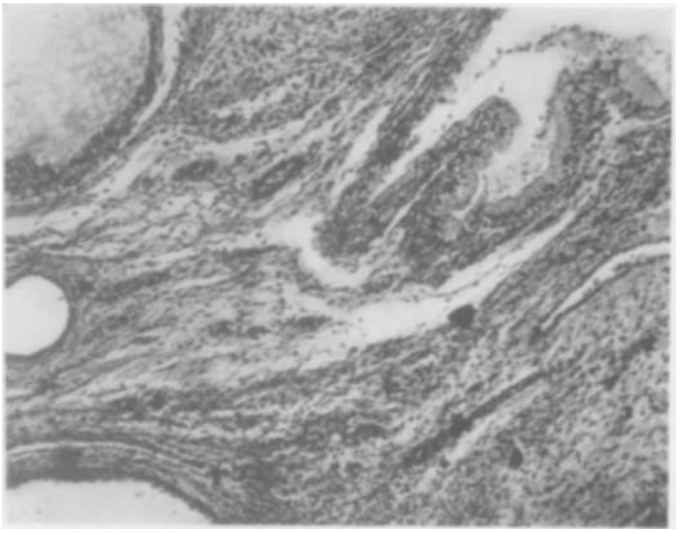

FIG. 4. HETEROGENEOUS STROMA OF CONNECTIVE TISSUE, PARTLY MUCOID, SMOOTH MUSCLE FIBERS AND GLIA SUPPORTING GLANDULAR GROUPS LINED WITH DIFFERENT TYPES OF EPITHELIUM

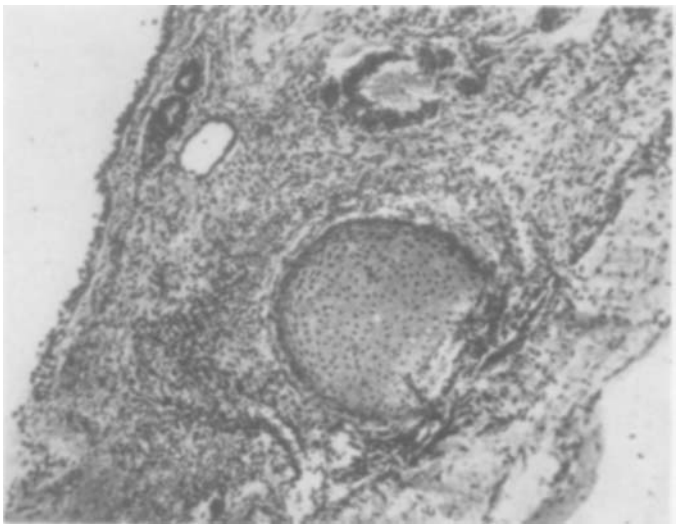

FIG. 5. HEMORRHAGIC STROMA SUPPORTING AN AREA OF CARTILAGE IN ADDITION TO GLANDULAR ACINI

mented cells suggested ocular ciliary epithelium. Other glandular groups were lined with tall columnar and with low cuboidal epithelium, suggesting gastro-intestinal and müllerian duct derivations. There was an island of well differentiated cartilage in one section. In addition to glial substance, fibrillar connective tissue and strands of smooth muscle contributed to the stromal matrix.

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[1] References marked with an asterisk are quoted from Hunziker.