Adenohypophyseal Tissue in an Immature Teratoma of the Human Ovary

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Abstract

An immature ovarian teratoma containing adenohypophyseal tissue with a central arteriole and interpositioned in mature neural tissue is reported in an asymptomatic 31-year-old woman. The tumor was a grade 2 immature teratoma according to the modified Thurlbeck-Scully histological grading system. Immunocytochemistry showed positive staining for growth hormone, prolactin, adrenocorticotropic, and alpha-subunit human chorionic gonadotropin and negative staining for thyroid-stimulating, follicle-stimulating, and luteinizing hormones in the adenohypophysis. The absence of staining for growth-hormone-releasing and corticotropin-releasing hormones, somatostatin, vasopressin, and neurophysin in adjacent tissue is consistent with the view that adenohypophyseal development is independent of the influence of these peptides. Endocr Pathol 4:48-52, 1993.

Human ovarian teratomas are common, comprising up to 30% of all ovarian neoplasms [15]. The presence of adenohypophysis within benign ovarian teratoma is rare [1, 3, 4, 7, 9, 12]. Previous reports confirmed the clinical importance of hormone-secreting anterior pituitary elements in mature ovarian teratomas [3, 7, 12]. One percent of ovarian teratomas are immature [15]. The presence of immature neural elements is important, and their grade correlates with the prognosis of the tumor [10, 11, 14].

In this report, we describe a case of immature ovarian teratoma containing adenohypophyseal tissue. Numerous studies have documented the formation and maturation of human fetal pituitary [2, 13]. Factors accounting for pituitary development have not been clarified.

Case Report

The patient, a 31-year-old woman had had a cesarean-section 1 year prior to her current complaint because of her short stature and breach presentation of the baby. At that time, both ovaries were found to be normal. One year later she complained of abdominal swelling. Physical examination disclosed a palpable pelvic mass about two finger breadths above the umbilicus. Ultrasound showed a multiseptate left ovarian cyst which measured 11.2 cm in greatest dimensions. A left ovarian cystectomy was performed. The patient had no endocrinological symptomatology before or 8 years following operation. She had no evidence of recurrence or metastases.

Material and Methods

The ovarian cyst had been fixed in 10% buffered formalin, and multiple sections were taken. Sections were embedded in paraffin and stained with hematoxylin and eosin.

Histological examination revealed adenohypophyseal tissue in one immature teratoma. This was the only case with recognized adenohypophyseal tissue in 305 cases of ovarian teratomas in the surgical
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pathology files of St. Michael’s Hospital, Toronto, from 1963 to 1990. The immature neural element in the teratoma was graded according to the modified Thurlbeck-Scully histological grading system of Norris et al. [11]. Immunocytochemistry was performed using the avidin–biotin–peroxidase complex (ABC) method of Hsu et al. [6]. The following antisera and dilutions were used: growth hormone (GH) (DAKO) 1/1,000; prolactin (PRL) (Dr. Friesen) 1/2,000; alpha-subunit human chorionic gonadotropin (HCG) (BIOGENIX) 1/1,000; thyroid-stimulating hormone (TSH) (CHEMINCON) 1/1,000; adrenocorticotropic hormone (ACTH) (NIH) 1/2,000; follicle-stimulating hormone (FSH) (NIH) 1/4,000; luteinizing hormone (LH) (NIH) 1/2,000; chromogranin (ENZO) prediluted; neuron-specific enolase (NSE) (DAKO) 1/6,000; glial fibrillary acidic protein (GFAP) (DAKO) 1/6,000; vasopressin (Dr. Nagy) 1/1,000; neurophysin (DAKO) 1/1,000; growth-hormone-releasing hormone (GRH) (Dr. Sano) 1/300; somatostatin (Dr. Reichlin) 1/2,000; and corticotropin-releasing hormone (CRH) (Dr. Vale) 1/1,000. All tissue sections were incubated with the primary antibody overnight at 4°C. Tissues with known immunoreactivity served as positive controls. Negative controls consisted of omission of primary antibody and substitutions with phosphate-buffered saline.

Morphological Findings

Gross Findings

The surgically removed ovarian cystic mass measured 11 × 10.5 × 7 cm. It was multiloculated with prominent polypoid excrescences protruding from the inner wall. It was largely cystic with the polypoid areas being fleshy, gray-yellow, and soft on cut surface and the content gelatinous.

Histological Findings

The tumor was composed of skin, skin appendages, fibroadipose tissue, cartilage, bone, salivary gland, and neural tissue. Immaturity of neural tissue consisting of neuroepithelium forming rosettes was limited to three low-power microscopic fields in all the slides (Figs. 1, 2). It was graded by the modified Thurlbeck-Scully histological grading system of Norris et al. [11] as grade 2 immature teratoma. One small well-circumscribed area adjacent to the immature neural tissue and in the vicinity of salivary gland contained acidophilic, basophilic, and chromophobe cells in organoid arrangement and was identified as adenohypophysis (Figs. 1, 3). Cells staining with periodic acid–Schiff reaction were not present. Centrally, segments of an arteriole were surrounded by palisading adenohypophyseal cells (Fig. 3).

Immunocytochemical Findings

In the adenohypophyseal tissue, immunoreactivity was found for GH (Fig. 4), PRL, ACTH, and alpha-subunit HCG. Immunostaining was negative for TSH, FSH, and LH. The surrounding glial tissue showed immunoreactivity for NSE, chromogranin, and GFAP but immunonegativity for

Figure 1. Immature teratoma containing an area of adenohypophysis (arrow) surrounded by mature neural tissue and immature neuroepithelium (double arrow) (hematoxylin and eosin, ×40).