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Case Report

Ovarian Sertoli-Leydig Cell Tumor with Hyperoestrinism

C.Y. Genton[1] and J. Schmid[2]

[1] Institute of Pathology of the University (Prof. Chr. Hedinger and Prof. J.R. Rüttner), Zürich, Switzerland
[2] Bürgerspital, Zug, Switzerland

Summary. This report concerns a very rare case of ovarian Sertoli-Leydig cell tumor associated with an evident hyperoestrinism, that occured in a 67-year-old woman. The clinical and pathological data are presented and discussed.

Key words: Ovarian Sertoli-Leydig cell tumor – Hyperestrinism

Introduction

Sertoli-Leydig cell tumors, also referred to as androblastomas, are infrequent ovarian neoplasms occuring mostly in young women (Novak and Long 1965; Scully 1977; Genton 1980). Some of these tumors have no endocrine activity but most of them prove to be androgenic and cause virilization of the patients. Ovarian Sertoli-Leydig cell tumors associated with hyperoestrinism are extremely rare. The purpose of this report is to present and discuss such a case.

Case Report

Clinical Data. This 67-year-old woman, a refugee from Indochina, was admitted to the hospital because of relapsing vaginal bleeding for the past year and the presence of a huge abdominal mass found incidentally by her physician. Detailed historical data could not be obtained as the patient's language was exclusively Chinese.

Physical examination was essentially negative except for the abdomen. An uneven abdominal mass was palpable from the pubic symphysis up to the left costal arch. Gynaecological examination revealed evidence of a strong oestrogenic effect. The vagina and cervical canal contained abundant glass-clear and strongly filaceous mucus. The cervical mucosa stained faintly with iodine solution. The vaginal smear confirmed the oestrogenic stimulation, the maturation index (MI) being 25/40/135 (Fig. 1). Any form of exogenous oestrogen administration could be excluded.

Offprint requests to: Dr. C.Y. Genton, Institut für Pathologie der Universität Zürich, Universitätsspital, CH-8091 Zürich, Switzerland

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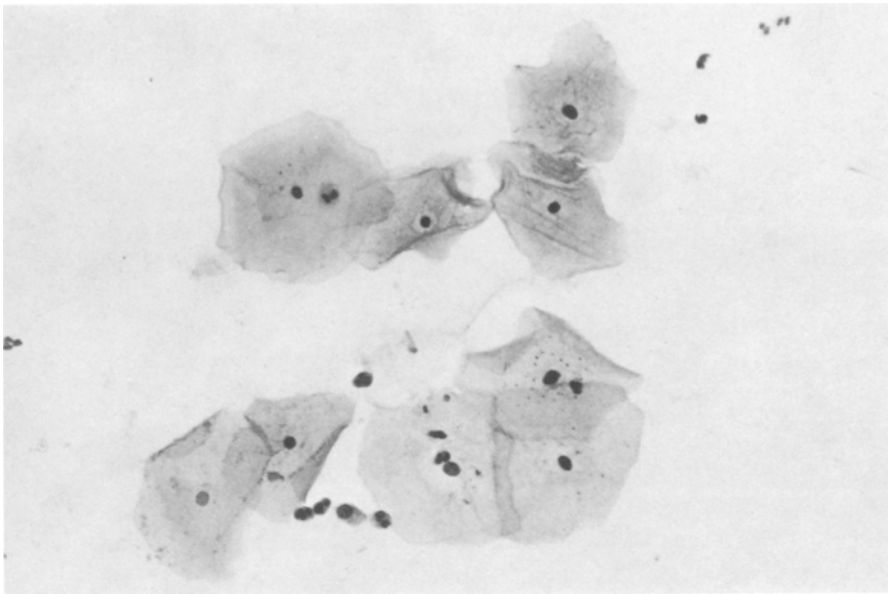


Fig. 1. Groups of superficial cells in the vaginal smear with high maturation index. Papanicolaou, ×250

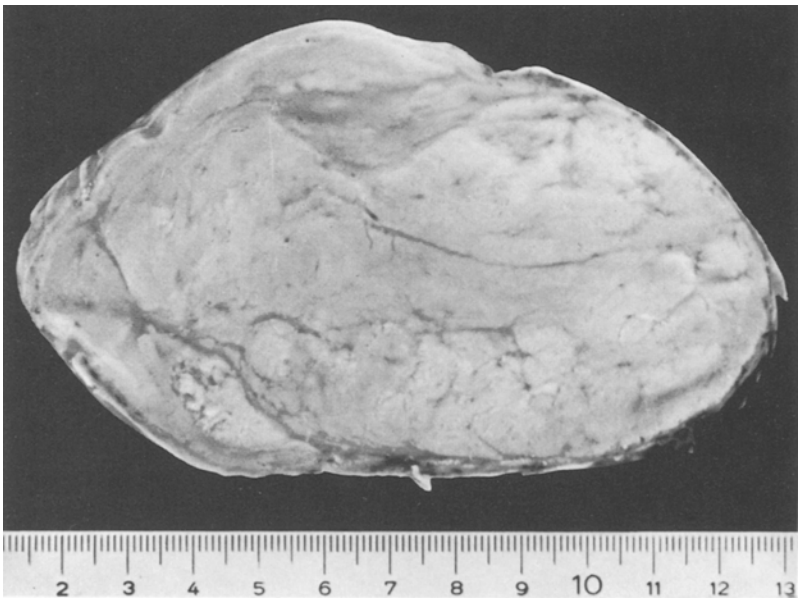


Fig. 2. Cut-surface of the solid right-sided ovarian tumor

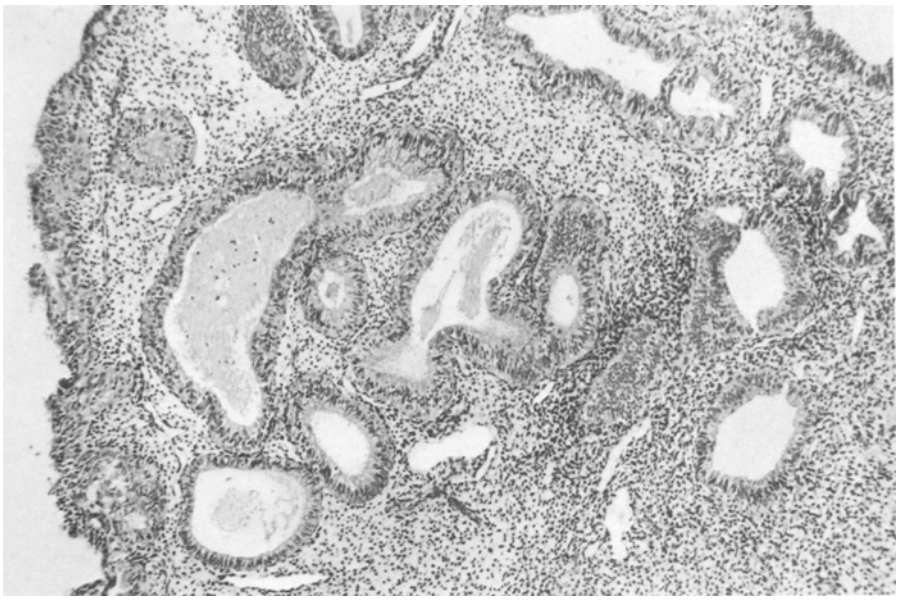


Fig. 3. Marked adenomatous hyperplasia of the endometrium demonstrating the oestrogenic stimulation. HE, × 63

At laparotomy a large uterus with multiple leiomyomas was found. The right ovary presented as a large encapsulated tumor partly adherent to the uterus. The opposite ovary appeared normal. Total hysterectomy and bilateral salpingo-oophorectomy were performed. The patient was discharged from the hospital after 13 days following an uncomplicated postoperative course.

Pathology. The uterus displayed multiple partly calcified leiomyomas, the endometrium was very thick and polypoid. The left ovary was unremarkable as were both fallopian tubes. The right ovary was replaced by a soft tumor measuring 13 × 10 × 8 cm (Fig. 2). Its surface was smooth, white and glistening. The cut-surface revealed solid and yellow-brown tumor tissue without necrosis or haemorrhage.

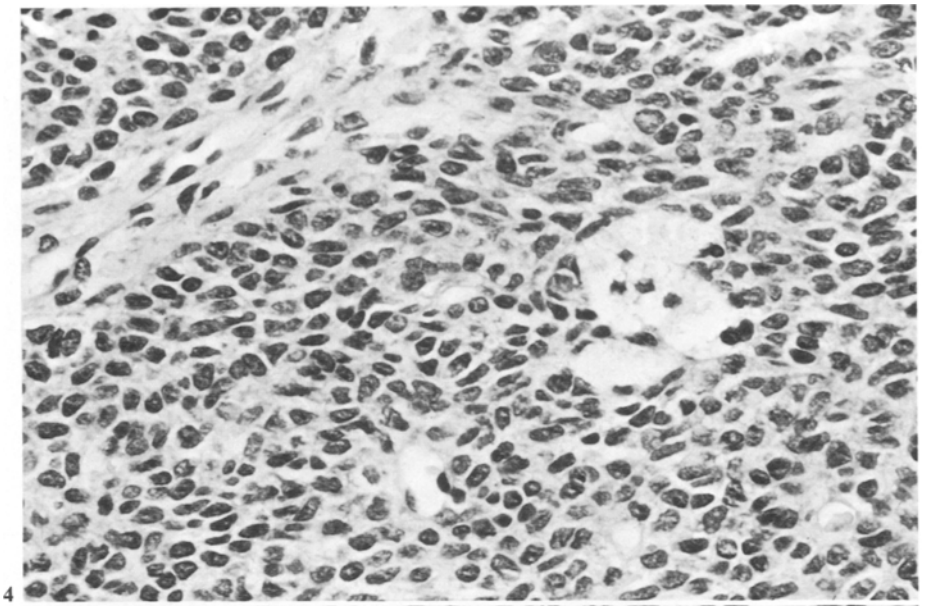
Microscopically the endometrium shows a marked adenomatous hyperplasia (Fig. 3) confirming the oestrogenic stimulation. The left ovary is essentially normal.

The tumor tissue of the right ovary consists of regular polygonal cells with indistinct boundaries. The nuclei are rather isomorphic, round to oval, with a delicate chromatin structure. Mitosis are rare. Dispersed throughout the tumor are small nests of lipid-laden cells (Fig. 4). This general aspect is reminiscent of a diffuse growing granulosa cell tumor with focal luteinization. However, particularly in the sub-capsular areas, the tumor cells form evident tubular structures lined by a single layer of cells. These tubules are separated from the surrounding tissue by reticulin fibers (Figs. 5 and 6). The presence of these structures led us to identify this tumor as a poorly differentiated Sertoli-Leydig cell tumor with a diffuse pattern[1]. No heterologous elements were present. Unfortunately the tumor had been fixed in formalin for over 24 h so that no suitable material for electron microscopy was available.

Discussion

According to Meyer (1931) the ovarian Sertoli-Leydig cell tumors are divided into three groups according to their degree of differentiation. The histological

[1] We are greatly indebted to Dr. R.E. Scully who reviewed the slides and confirmed our diagnosis



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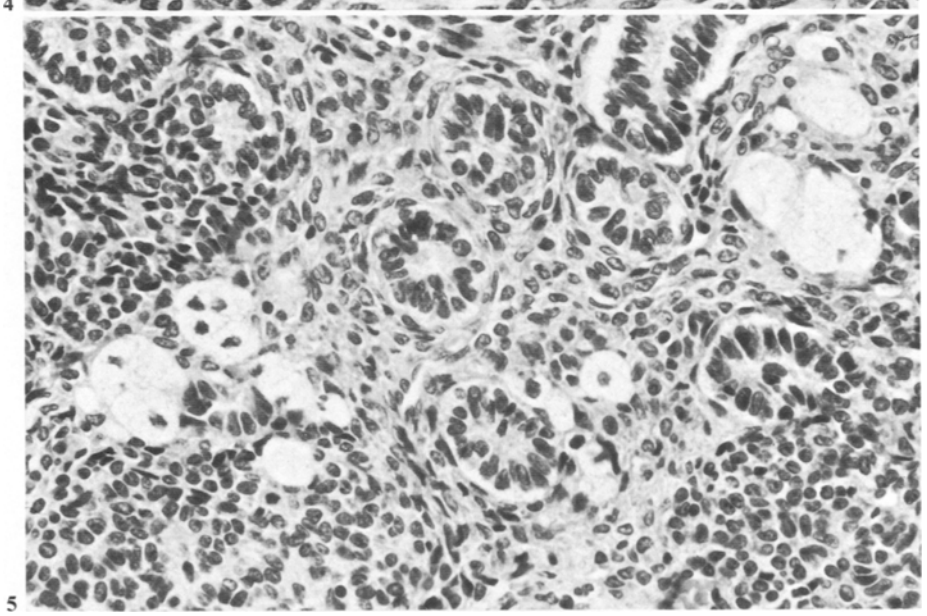

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Fig. 4. Solid tumor tissue composed of polygonal cells with rather isomorphic round to oval nuclei and containing a group of lipid-laden cells. HE, ×400

Fig. 5. Area of tumor tissue containing obvious tubular structures and some groups of lipid-laden cells. HE, ×320

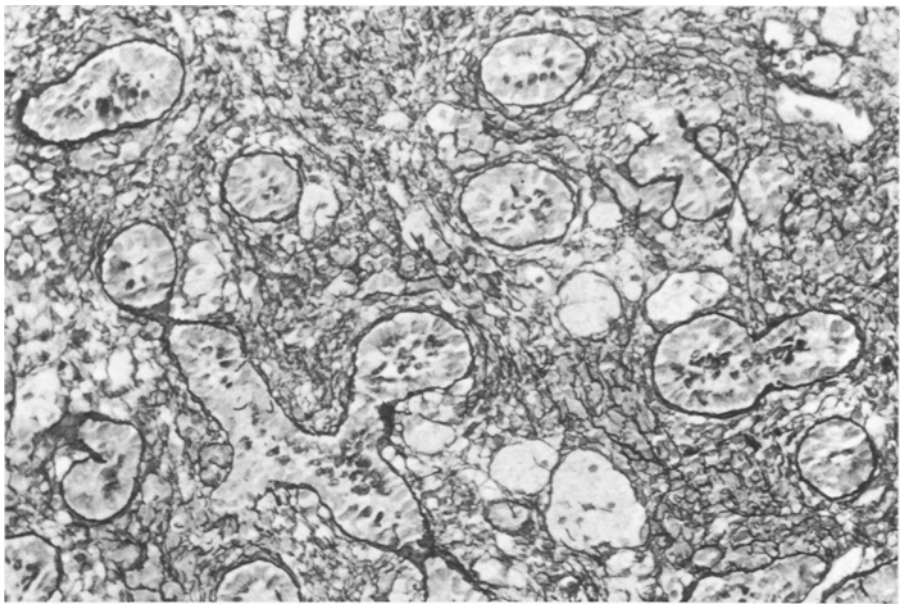

Fig. 6. Same area as Fig. 5 demonstrating evident reticulin fibers around the tubules and numerous Sertoli cells. Silver impregnation, ×200

diagnosis of the well and moderately differentiated androblastomas can be made easily. In both tumor types tubules formed by Sertoli cells and islands of Leydig cells often containing typical Reinke crystals are readily recognizable. In contrast, differential diagnosis between undifferentiated or so-called pseudosarcomatous androblastoma and diffusly growing granulosa cell tumor can be very difficult if not impossible (Morris and Scully 1958; Kempson 1968). On the one hand luteinized neoplastic granulosa cells may be indistinguishable from Leydig cells if these do not contain Reinke crystals, even with help of electron microscopy and on the other hand the moderately and poorly differentiated Sertoli cells in androblastomas have striking light-microscopical and ultrastructural similarities with neoplastic granulosa cells (Jenson and Fechner 1969; Genton 1980). The endocrine activity of the neoplasm is of no help in differential diagnosis, since both tumor types may produce androgens as well as oestrogens (Giuntoli et al. 1976; Soules et al. 1978). These diagnostic difficulties are well illustrated by our present case in which extensive areas of the tumor tissue are microscopically indistinguishable from a focally luteinized granulosa cell tumor. No typical Leydig cells, with or without Reinke crystals, could be found. The presence of evident tubular structures, quite different from Call-Exner bodies, is almost the only feature exhibited by the tumor tissue that permits the diagnosis of a poorly differentiated Sertoli-Leydig cell tumor.

Androblastoma, although rare, is the most common androgenic tumor of the ovary. In some cases with obvious virilization it was shown that testosterone and androstenedione levels were highly elevated in the ovarian venous blood (Roth et al. 1974; Meldrum and Abraham 1979). For a long time there was

no convincing evidence of which type of cell is responsible for testosterone production. Kurman et al. (1978) showed in their immunohistological study of nine ovarian androblastomas, that both Sertoli and especially Leydig cells contained testosterone. Oestradiol and oestriol were also occasionally present, most often located in the Sertoli cells. One year later, these same authors brought some evidence for the presence of small amounts of testosterone in addition to abundant oestradiol in neoplastic granulosa cells (Kurman et al. 1979). This observation emphasizes the close relationship existing between Sertoli cells in androblastomas and neoplastic granulosa cells.

The ovarian androblastomas with feminizing properties described by Teilum (1949) were largely composed of highly differentiated tubular structures with lipid-containing Sertoli cells. However, the neoplasm reported here is a poorly differentiated Sertoli-Leydig cell tumor. In our postmenopausal patient hyperoestrinism is evidenced by the vaginal smear as well as by the adenomatous hyperplasia of the endometrium. Unfortunately no specific endocrinological studies, in particular no selective venous sampling, were performed. Therefore the question whether the tumor produced oestrogens or actually secreted androgens that were converted into oestrogens by the peripheral fat tissue remains unanswered.

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