Case report

Oncocytic adenocarcinoma of the ovary

A. Takeda¹, M. Matsuyama¹, Y. Sugimoto², K. Suzumori², T. Ishiwata³, S. Ishida³, and Y. Nakanishi³

¹ Laboratory of Ultrastructure Research, Aichi Cancer Center Research Institute, Tashiro-cho, Chikusa-Ku, Nagoya 464, Japan
² Department of Obstetrics and Gynecology, School of Medicine, Nagoya City University, Nagoya, Japan, and
³ Department of Obstetrics and Gynecology, Tohsei Hospital, Seto, Japan

Summary. A case of ovarian adenocarcinoma mainly composed of oncocyes was studied by light and electron microscopy. Oncocytes, characterized by granular and eosinophilic cytoplasm by light microscopy possessed numerous mitochondria at the ultrastructural level. These oncocytes were classified into two types: typical and condensed oncocytes. Typical oncocytes seemed to be active, whereas condensed oncocytes were thought to be involved in a degenerative process. The two types of cells showed a close similarity to oncocytes in other organs (e.g., thyroid, parathyroid and salivary glands). This appears to be the first report of an ovarian oncocytic tumor.

Key words: Oncocyte – Adenocarcinoma – Ovary

The oncocyte is a histologically distinctive cell type characterized by granular and eosinophilic cytoplasm under light microscopy (Hamperl 1962). Electron microscopic investigations show that oncocytes have numerous mitochondria which occupy most of the cytoplasm, and the authors of these reports have proposed an ultrastructural criterion, mitochondrial hyperplasia, for diagnosing oncocytes and oncocytic tumors (Tandler et al. 1970; Askew et al. 1971; Fechner and Bentinck 1973). The cells, which were believed to be developed from metaplasia of epithelial cells, have been observed in several organs such as the salivary, thyroid, and parathyroid glands (Tremblay 1969). Tumors composed of oncocytes are also known to develop in certain other organs (Hamperl 1962; Walter et al. 1978; Yu et al. 1980; Warton et al. 1981). These tumors are rare and generally possess a benign character, but some malignant ones have also been reported (Sidhu and Waldo 1975; Meijer and Hoitsma 1982).

To the authors’ knowledge, ovarian adenocarcinoma with oncocytic change has not been reported in the literature. This is the first report to describe the light and electron microscopic features of a case of ovarian adenocarcinoma in which numerous tumor cells showed an oncocytic change.

Offprint requests to: A. Takeda at the above address
Case report
A 39-year-old Japanese housewife (gravida 4, para 1) visited the Department of Obstetrics and Gynecology, Tohsei Hospital (Seto, Japan) on June 18, 1981 with complaints of lower abdominal pain for 6 months. Physical examination revealed a lower abdominal tumor, and ultrasonographic examination revealed a cystic ovarian tumor with partially solid character. Laboratory data showed no abnormal findings. Under the diagnosis of ovarian cancer, a laparotomy was performed on July 9, 1981. Left ovarian tumor was found in the lower abdomen with no evidence of metastasis. Trans-abdominal hysterectomy and bilateral salpingo-oophorectomy were performed. Follow-up studies have been conducted for 13 months and the patient had no signs of recurrence as of August, 1982.

Materials and methods
For light microscopy, tumor tissues were fixed in 10% formalin and divided into five segments. Then three tissue samples were taken from each segment. Sections prepared under the general procedure were stained with hematoxylin and eosin, PAS, Alcian blue (pH 1 and 2.5), mucicarmine, PTAH and Grimelius method. For electron microscopy, tumor tissues were fixed in 2.5% glutaraldehyde and 2% paraformaldehyde, postfixed in 1% OsO₄, dehydrated in graded ethanol and embedded in Epon 812. Ultrathin sections cut on an LKB Ultratome Type 4801A were double stained with uranyl acetate and lead, and examined in a Hitachi HU-12 electron microscope.

Results
Gross findings
A tumor developed from left ovary was well encapsulated and measured 15 x 12 x 9 cm (Fig. 1). The cut surface showed a large monocystic appearance with partially solid proliferation. Cystic fluid was serous and yellow.