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CASE REPORT

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Oncocytic adenocarcinoma of the ovary

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Abstract A rare case of ovarian adenocarcinoma with extensive oncocytic differentiation is presented. Light and electron microscopy examination and a specific stain for mitochondria (chromotrope-alcian blue) confirmed the diagnosis. The tumour cells revealed abundant granular and eosinophilic cytoplasm containing a large number of mitochondria. The tumour had a malignant infiltrative pattern and cellular atypia.

Key words Oncocyte · Adenocarcinoma · Ovary

Introduction

An oncocyte is a cell with granular and eosinophilic cytoplasm and with mitochondrial hyperplasia [1–3, 9, 12]. Tumors composed of oncocytes have been described in different organs [1–5, 7, 9–11, 13]. The first report of oncocytoma of the ovary (benign variant) was published by Yoshida et al. [12], and the first oncocytic adenocarcinoma of the ovary was described in 1983 by Takeda et al. [8]. Since then there have been no other descriptions of pure oncocytic adenocarcinoma of the ovary. Pitman et al. [5] described oncocytic changes in nine cases of endometrioid carcinoma of the ovary and endometrium, one of which could be considered an example of an oncocytic tumour. This seems to be the second report of oncocytic adenocarcinoma of the ovary. The diagnosis was based on light and electron microscopy and the chromotrope-alcian blue (CAB) technique [6], a specific stain for mitochondria.

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Case report

A 58-year-old single woman, a virgin undergoing the menopause, had observed an abdominal and pelvic mass growing slowly for the past 5 months before admission. On admission, the physical examination revealed a bulky abdominal mass making palpation of the pelvic organs difficult. The other physical and laboratory findings were within normal limits. At laparotomy, a multicystic and voluminous tumour weighing 2350 g was found, without evidence of metastases. A panhysterectomy and a bilateral salpingo-oophorectomy were performed. On the 7nth postoperative day the patient was discharged without further treatment. Now, 1 year after discharge, the patient is alive though with abdominal metastases; she has a CA-125 level of 108 U/ml. This is a serum tumour marker that is elevated in patients with advanced ovarian cancer. The patient will be receiving chemotherapy.

Materials and methods

Sections from different areas of the tumour were fixed in 10% formalin, embedded in paraffin, and stained with haematoxylin and eosin (HE) and by the periodic acid–Schiff (PAS) method, with and without diastase digestion. Additional slides were stained by the CAB technique for mitochondria detection. For electron microscopy, samples from the tumour already fixed in 10% formalin were collected and postfixed in 1% O_sO_4, dehydrated in graded ethanol, and embedded in an Epon-Araldite mixture. Ultrathin sections were contrasted with uranyl acetate and lead hydroxide and examined with the electron microscope.

Pathological findings

On gross observation, the tumour was seen to be adjacent to the ovary: it was a very large, soft mass, measuring 20 × 20 × 16 cm and weighing 2350 g. The cut surface disclosed a variegated aspect: cystic structures of variable size, containing mucous material and frequent papillary structures. These cysts were intermingled with grey and yellowish soft friable solid areas.

Light microscopy showed a neoplasm with benign-appearing areas made up of glands and papillae lined with oxyphilic cells. Abundant granular and eosinophilic cytoplasm (Fig. 1) was observed, intermingled with slight-

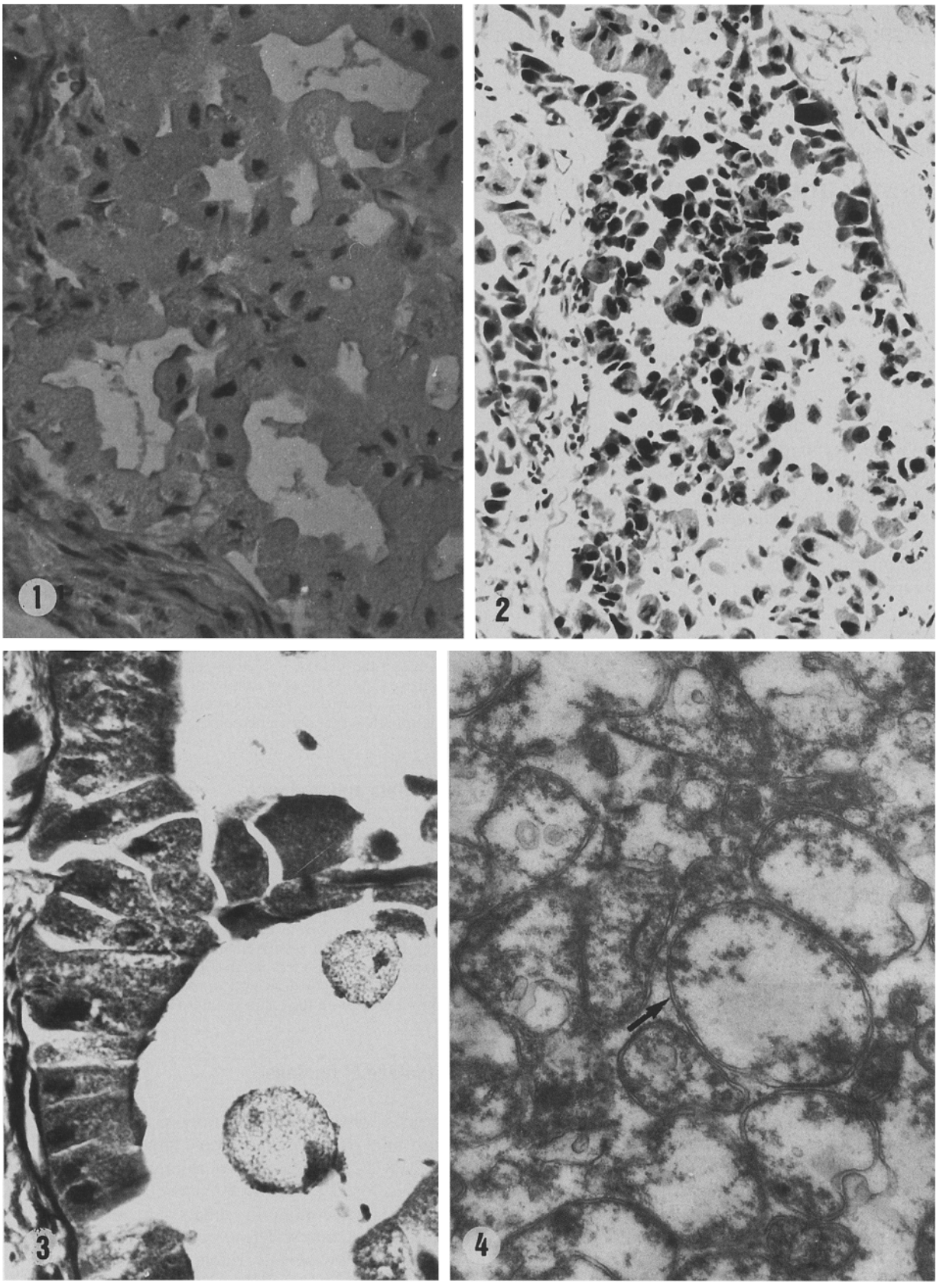

Fig. 1 Photomicrograph showing sheaths of neoplastic cells with abundant granular and eosinophilic cytoplasm, and glands containing mucus, as shown by photomicrograph. (HE, ×130)

Fig. 2 Slight nuclear pleomorphism and infiltrative pattern, as revealed by light microscopy. (HE, ×50)

Fig. 3 Light microscopy exhibiting oncocytic cells with abundant granular cytoplasm, suggesting a large number of mitochondria. (CAB, ×360)

Fig. 4 Electron microscopy of oncocytic cells showing mitochondria with double membrane (*arrow*). (×36,000)

ly atypical infiltrating glands with mild nuclear pleomorphism (Fig. 2), compatible with an adenocarcinoma. The cystic and the solid areas had the same histological aspect. The stroma was scarce. A PAS-positive substance was observed in the neoplastic cells and in the glands. CAB stain for mitochondria revealed red granular cytoplasm (Fig. 3), loaded with red rods observed on immersion examination (×1,000).

The electron microscopic studies depicted cells filled up with mitochondria, many cytoplasmic electron-dense secretory granules and microvilli. Autolysis was present but did not interfere with identification of the mitochondrial double membrane and cristae (Fig. 4).

Discussion

A case of oncocytic neoplasm of the ovary is presented. The final diagnosis was established on the basis of the specific CAB method and ultrastructural studies for mitochondrial identification. The criteria for mitochondrial hyperplasia recognition used in our case are in agreement with those used by other authors [1, 2, 9]. Takeda et al. [8] reported the first case of oncocytic adenocarcinoma of the ovary, with a detailed ultrastructural description. Our findings are similar to those described by Takeda et al. [8]; however, our case demonstrated benign-appearing areas intermingled with atypical infiltrating glands. These atypical features, and also the clinical history of peritoneal dissemination, are compatible with the diagnosis of low-grade adenocarcinoma. The autolysis present did not hinder the pathological interpretation, since the mitochondrial double membrane and cristae were easily identified. This is only the second report of oncocytic ovarian adenocarcinoma, and we consider that as there were some areas with a benign appearance it is possible that there could have been a malignant transformation of a previously benign oncocytic tumour.

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