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Case report

Disseminated peritoneal leiomyomatosis with malignant change, in a male

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Summary. Disseminated peritoneal leiomyomatosis (DPL) is a rare disorder, characterized by the occurrence of multiple leiomyomas scattered throughout the peritoneal cavity. Until this report DPL had been observed only in women and there is only one previous case with malignant change. A case of DPL in a male, complicated by sarcomatous transformation is reported. DPL has a definite malignant potential; patients with the disease should be followed closely for signs of progression.

Key words: Disseminated peritoneal leiomyomatosis – Leiomyosarcoma

Introduction

Disseminated peritoneal leiomyomatosis (DPL) is a rare disorder characterized by the occurrence of multiple subperitoneal leiomyomas scattered throughout the peritoneal cavity, resembling disseminated peritoneal malignancy. The nodules are histologically benign leiomyomas, and the usually favourable clinical outcome indicates the basically benign nature of the condition (Enzinger and Weiss 1983). Some 50 cases of DPL have been reported, all in women. Among these was only one report of a fatal outcome due to malignant change (Rubin et al. 1986), which is in agreement with the view that leiomyomas, like other benign soft tissue tumours, seldom undergo malignant transformation.

The purpose of this paper is to report the first case of DPL in a male, a case which was complicated by malignant transformation.

Case report

A 41-year-old male was admitted with a history of diarrhoea and increasing abdominal distension for 2 weeks. On admission he appeared chronically ill, emaciated and anaemic. The temperature was 38.6° C. The abdomen was tympanic and immensely distended, but due to the distension no details could be felt on palpation. Physical examination revealed no other abnormality but atrophy of the right testis.

Blood findings were normal apart from mild anaemia and hypoalbuminaemia, slightly decreased clotting factors (II + VII + X) and slightly elevated alkaline phosphatase and α-amylase.

Radiographic examinations [plain films, computed tomography (CT) of the abdomen, barium enema and ultrasonography] showed a large mass containing fluid and gas, located centrally in the abdomen. No other abnormality was revealed in the intraabdominal organs. *X*-ray of the thorax was normal.

At laparotomy numerous firm, partly pedunculated tumours were found on the mesentery of the small intestine. These tumours varied in size from few millimetres to several centimetres in diameter (Fig. 1). More conspicuous was a lumpy, cystic tumour measuring 40 cm in diameter. The tumour was adherent to the greater omentum and the pelvic and sacral cavities through easily loosened veil-like peritoneal adhesions. The adhesions contained smaller

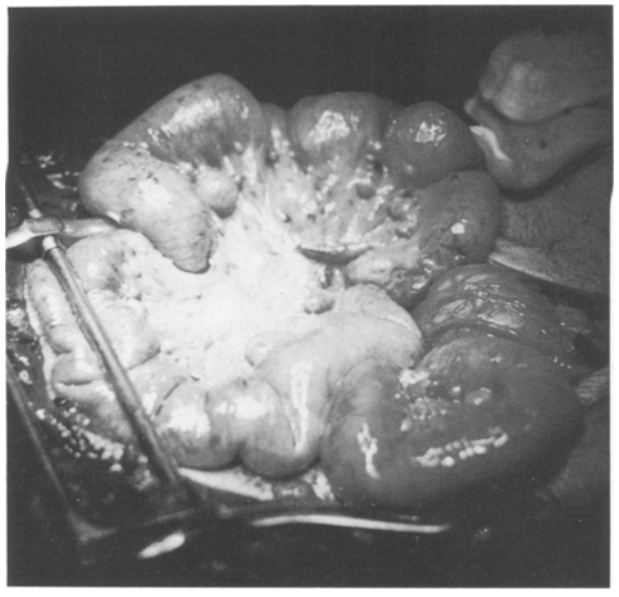

Fig. 1. Photograph taken at laparotomy, showing numerous tumours on the mesentery of the small intestine

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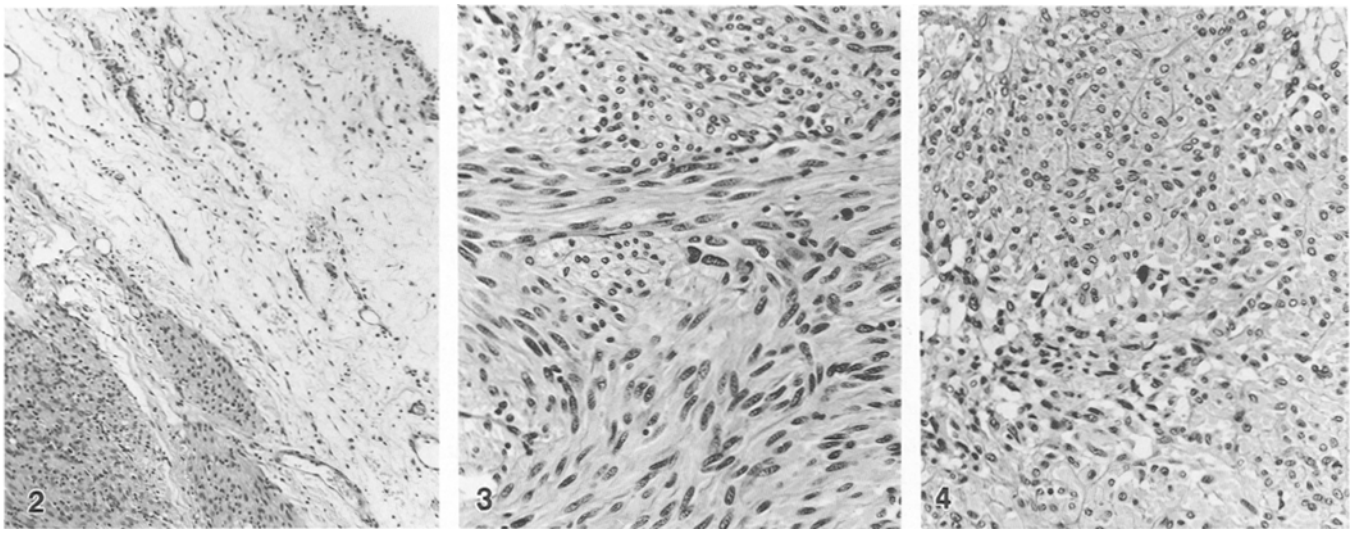

Fig. 2. Section from one of the small tumours. The subperitoneal location is illustrated. H&E × 100

Fig. 3. Part of the large tumour with spindle cells. H&E × 200

Fig. 4. Part of the large tumour with round cells, nuclear pleomorphism and necrosis. H&E × 200

blood vessels, but no proper stalk was seen; thus the origin of the tumour could not be established with certainty. The liver, pancreas, stomach and intestines were normal, and there was no ascites. The large mass and two of the small tumours were removed.

The immediate recovery was uneventful, and the patient was referred to an oncology centre. Initially CT showed no signs of residual tumour, but 4 months later CT revealed several tumours in the abdomen, and cytostatic treatment was started. Doxorubicin (Adriamycin) was given in six series but stopped because of progressive disease. Therapy with ifosfamide and later with sulphonylurea in short series had no effect on the progression of the tumours. No further treatment is scheduled as the disease progresses.

Results

The two small tumours from the mesentery of the small intestine were rounded with diameters of 1.5 cm. The large tumour appeared lobulated and cystic. The cut surface was whitish and fleshy, and the cystic cavity contained haemorrhagic, necrotic material and gas.

The two small tumours consisted of fusiform cells, arranged in compact fascicles oriented perpendicular to each other. The nuclei were ovoid or elongated with rounded ends, and hyperchromasia and atypia were not seen. There were very few mitosis (0–1/10 HPF). The tumours were rather vascular and they were subperitoneal (Fig. 2).

The large tumour differed from the small tumours. It was more cellular, with some nuclear pleomorphism, some cells having clear zones surrounding the nucleus. Giant cells and foci of tumour necrosis were present, but only very few mitotic figures were found (0–1/10 HPF). Numerous vascular spaces were present. There was no myxoid change, hyalinization or calcification (Figs. 3, 4).

Discussion

Distinguishing DPL from metastases from a possible leiomyosarcoma or other malignant neoplasia is important in avoiding extensive surgical or chemotherapeutic treatment when this is not necessary. This has been considered in previous papers on the subject (Goldberg et al. 1977; Rubin et al. 1986; Sutherland et al. 1980; Tavassoli and Norris 1982).

The present case raises a slightly different question: is this a case of DPL with malignant change, or disseminated sarcoma mimicking DPL? While the latter possibility cannot be ruled out, it is more likely that the multiple nodules on the mesentery of the small intestine represent the multicentric elements of DPL. The nodules were homogenous, well-delineated, well-differentiated, showed an expanding growth pattern without extension along tissue septa or vessels, and the nodules differed in morphology from the large tumour. Furthermore, the subperitoneal location would be an unlikely result of intraperitoneal seeding, and the location of the nodules on the mesentery would be a very unlikely result of lymphatic or haematogenous spread. Finally, the retroperitoneal lymph nodes were unremarkable, and there were no signs of metastases to the lungs, liver or bones at the time of operation.

It is generally agreed that DPL is of multicentric origin, presumably developing from pluripotent subcoelomic mesenchymal stem cells (Goldberg et al. 1977; Tavassoli and Norris 1982). The aetiology and pathogenesis are unknown. Some form of sexual hormonal mediation may play a role, either in the form of "excessive" or imbalanced hormonal stimulation (pregnancy, oral contraceptives, oestrogen-producing tumours (Brumback et al. 1985; Tavassoli and Norris 1982)), or in the

form of altered sensitivity of the tissue (Sutherland et al. 1980). Hormonal evaluation in the present case was not done, and hormone-receptor analyses were not performed. The cause of the atrophy of the right testis is not known.

This case is to our knowledge the first reported case of DPL in a male. The presumed hormonal influence on development of the condition may be part of the explanation of its rarity in males but it is possible that previous cases in males may have been interpreted as disseminated malignancies or reported under other headings (Brumback et al. 1985; Nagar et al. 1982; Payson et al. 1981; Spaun and Nielsen 1986; Yunis et al. 1966).

Establishment of the criteria of malignancy in smooth muscle tumours is generally difficult, as the tumours represent a continuum from "benign" to "malignant". Moreover, it is necessary to use different criteria for tumours of different origin (Enzinger and Weiss 1983; Evans 1985; Ranchod and Kempson 1977). In retroperitoneal and in gastrointestinal smooth muscle tumours, a high mitotic activity (more than 5–10 mitoses/10 HPF) is considered to be sign of malignancy, while tumours with less than 5 mitoses/10 HPF are considered potentially malignant. Large size, necrosis and nuclear atypia are important indicators of malignancy, especially in tumours of retroperitoneal origin.

The large tumour had a low mitotic rate, but it fulfilled the other criteria of malignancy and was subsequently classified as a leiomyosarcoma. The clinical course has confirmed the diagnosis.

From our own and one previously reported case (Rubin et al. 1986), it appears that DPL has a definite malignant potential. Affected patients should be followed closely for signs of progression.

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