

A Case of a Massive Ovarian Tumor

Kaoru DEHARA, Mayumi TAKASAKI and Yoshihiro KOSAKA

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In the surgical management and postoperative care of patients with large ovarian tumors, supine hypotension by partial occlusion of the inferior vena cava, ventilatory failure due to elevation of the diaphragm, immediate circulatory collapse after removal of ovarian tumors, massive blood replacement, postoperative respiratory failure and prolonged bowel distension are hazardous factors¹. Especially, removal of large intra-abdominal masses during surgery produces sudden and severe hypotension¹⁻³. However, we experienced no change in arterial pressure, though 20 liters of intratumoral fluid were rapidly aspirated in a patient with a massive ovarian tumor. In this patient, respiratory failure was a chief cumbrance.

Case Report

A 41-year-old-woman was admitted with the complaint of increasing abdominal girth and progressive dyspnea. Three months previously, the patient was noted to have an ovarian mass, but refused recommended medical care. She has had no remarkable disease history nor family history.

On admission the patient was unable to take a supine posture because of dyspnea. She was normothermic; her pulse rate was 90 beats/min; blood pressure was 140/70 mmHg; and respiratory rate was 24 beats/min. The body weight was 83 kg and the height was 157 cm. The

abdomen was massively distended (fig. 1). The abdominal girth was 124 cm. Both the legs were enlarged, edematous, and indurated. The urine output was approximately 300 ml/day. The laboratory data revealed nothing abnormal except slight hypoproteinemia (total protein 6.2 g/dl, albumin 2.9 g/dl) and slight hypoxemia (PaO₂ 62 mmHg). The chest radiograph showed marked elevation of the diaphragm and the decreased lung volume (fig. 2). Abdominal CT disclosed a large isotonic low density area. Abdominal B-scan echograph showed a cystic tumor with a smooth margin, suggesting serous cystadenoma.

The patient was premedicated intramuscularly with 0.5 mg of atropine and 10 mg of diazepam 30 min before operation. She was placed in a Fowler's position on the operating table. The radial artery was cannulated for continuous monitoring of arterial pressure. The central venous pressure (CVP) was monitored via a catheter inserted through the right internal jugular vein. Anesthesia was induced, while still in a Fowler's position, with 175 mg of thiamylal, and tracheal intubation was accomplished after injection of 50 mg of succinylcholine. Anesthesia was maintained with halothane, nitrous oxide and oxygen, and ventilation was manually assisted. The patient's position was altered to a supine position under careful monitoring of arterial pressure.

The intratumoral fluid that amounted to 19.6 liters was aspirated for 7 min. During fluid aspiration, CVP fell from 15 mmHg to 8 mmHg but hypotension did not appear. Then the abdominal wall was fully opened,

Department of Anesthesiology, Shimane Medical University, Izumo, Japan

Address reprint requests to Dr. Dehara: Department of Anesthesiology, Shimane Medical University, 89-1 Enya-cho, Izumo, 693 Japan

which was followed by total hysterectomy and bilateral salpingo-oophorectomy. The tumor was found to have grown in the left ovary. The total weight of the tumor and fluid was 21.8 kg. After the operation, the patient was transferred to the intensive care unit for respiratory support.

The patient was ventilated mechanically with positive end-expiratory pressure of 5–7.5 cmH₂O. Immediately after accommodation in the intensive care unit, the respiratory index was 10.7. The chest radiograph showed marked collapse of the right and left lower lobes. The diaphragm was obscured by the collapsed lobes. Although a typical shadow of pulmonary edema was not found on the chest x-ray film, white serous sputum was aspirated frequently from the trachea in large quantities. The respiratory index improved to 1.5 on the 1st postoperative day. The tracheal tube was extubated on the 4th postoperative day. A sufficient urine output was obtained without any diuretics. Water balance during 6 days of accommodation in the intensive care unit is shown in figure 3. Negative water balance of 15 liters during 6-days was observed. In spite of intravenous hyperalimentation, hypoproteinemia (total protein 4.3 g/dl) and poor bowel movement persisted. She was returned to her ward on the 6th postoperative day. The body weight decreased to 41 kg and the abdominal girth decreased to 81 cm.

Histopathological examination of the tumor revealed a small lesion of mucinous cystadenocarcinoma coexisting within serous cystadenoma. She was discharged from our hospital after treatment with drugs and radiation for carcinoma.

Discussion

A serious problem in the present case was respiratory failure caused by atelectasis of both the lower lobes due to long-term elevation of the diaphragm. This continued into the postoperative period. Furthermore, postoperatively, pulmonary edema caused by fluid overload from the lower half of the body back into systemic circulation



Fig. 1. Preoperative view of the patient

was added. Although poor contractility of the diaphragm stretched by a large ovarian tumor might have been present and contributed to respiratory failure¹, this was not clear.

The surgical removal of a massive ovarian tumor produces sudden and severe hypotension^{1–3}. It may be due to splanchnic vasodilation and venous pooling. Release of partial compression of the abdominal aorta might produce a sudden fall in peripheral resistance¹. For avoidance of blood pressure changes resulting from sudden release of increased intra-abdominal pressure, prolonged decompression has been recommended. However, Symmonds et al.⁴ stated that severe hypotension was less dangerous than the potential hazard presented by repeated tapping and drainage. The hazards of preoperative drainage are the possibility of spillage of fluid into the peritoneal cavity and seeding of an ovarian carcinoma, and the increased chance of intra-abdominal infection, hemorrhage and adhesions. When operating a massive ovarian tumor, slow suction of inner fluid is also recommended to reduce circulatory change^{3,5}. However, in this patient, hypotension did not occur, though rapid suction decompression was done. The rapid loss of less than 20 liters of intratumoral fluid observed in this and other reports⁶ might not produce acute blood pressure changes.

In summary, in the management of patients with massive ovarian tumors, anes-

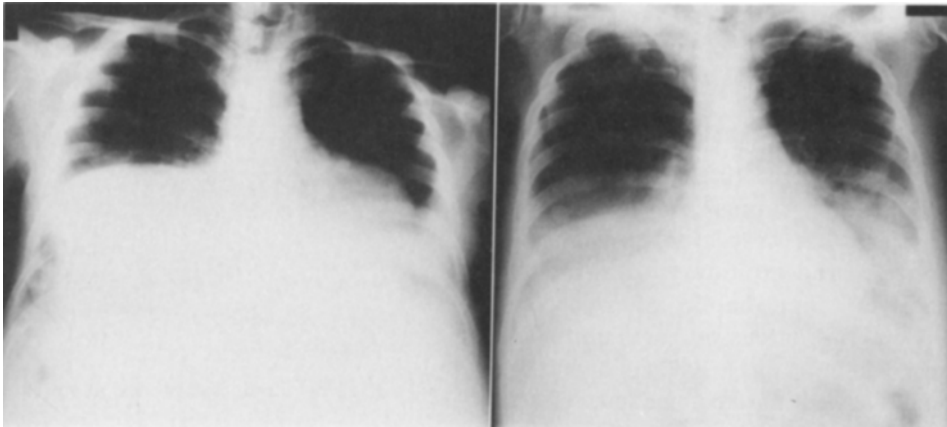


Fig. 2. Preoperative chest radiograph (left) demonstrating elevation of the diaphragm and the decreased lung volume, and postoperative chest radiograph (right) illustrating collapse of the lower lobes during mechanical ventilation with positive end-expiratory pressure of 5 cmH₂O

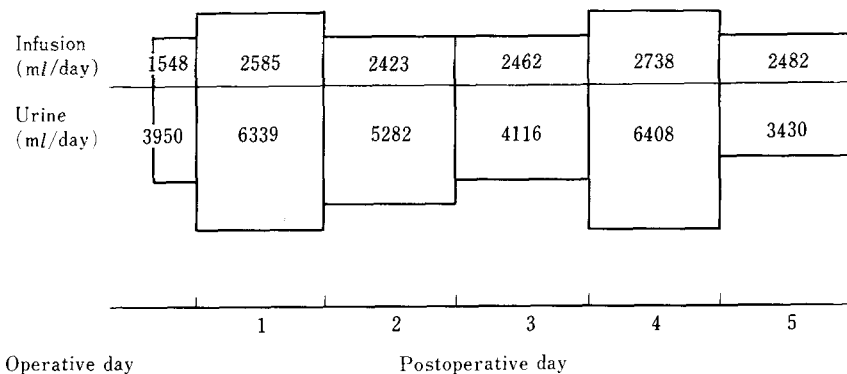


Fig. 3. Water balance during 6 days after operation

thesiologists should be cautious of various possible complications throughout the perioperative period. Hemodynamic monitoring, respiratory support and intensive care are mandatory.

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