[症例報告]Umbilical hernia presented with postoperative pulmonary embolism : A case report and a review of the literature

Umbilical hernia presented with postoperative pulmonary embolism : A case report and a review of the literature

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ABSTRACT

Pulmonary embolism (PE) is a disease with a poor prognosis and common in western people. We experienced a case of PE after an operation for umbilical hernia. A 72-year-old woman whose height was 146 cm and weight was 78 kg, was referred to our hospital because of a soft mass ($15\times12\times8$ cm^3) in the umbilical region. Umbilical hernia was diagnosed with both physical examination and abdominal computed tomography. A radical operation was performed. On the 2nd postoperative day when she moved, she suddenly had dyspnea and fell into unconsciousness with hypoxemia. Multiple perfusional defects were revealed by a pulmonary blood flow scintigram, and the case was diagnosed as PE. We started thrombolytic and anticoagulant therapy with heparin and urokinase immediately. She was discharged from the hospital without sequelae on the 33rd postoperative day. It is thought that PE occurred due to deep vein thrombosis, increased intra-abdominal pressure caused by the bowel returning into the abdominal cavity, tightening of the abdominal wall and obesity. If postoperative sudden onsets of dyspnea and unconsciousness with hypoxemia of unknown origin are encountered, examination and treatments should immediately be done keeping the presence of PE in mind. *Ryukyu Med. J., 21(3,4) 187～190, 2002*

Key words: operation for umbilical hernia, postoperative complication, pulmonary embolism

INTRODUCTION

Pulmonary embolism (PE) is a disease with a poor prognosis and common among the western people[1]. However, reports of PE after an abdominal operation are rare in Japan.

Herein, we report a case of PE after an operation for umbilical hernia and a review of the literatures.

CASE REPORT

A 72-year-old woman was admitted to our hospital with a long history of a soft mass in the umbilical area. Her height was 146 cm, weighed 78 kg and body mass index (BMI) [body weight (in kilograms) divided by height (in meters)^2] was 36.56. Her lower extremities showed no signs of varicose veins. The size of the mass in the umbilical region was $15\times12\times8$ cm^3 and she complained of pain because of the skin erosion at the top of the mass. Abdominal computed tomography (CT) depicted an incarceraed bowel with its mesentery in the hernia sac (Fig. 1). Because she had no symptoms of intestinal obstruction, a radical operation was performed after treating the skin infection at the umbilical hernia. Under a satisfactory endotracheal general and epidural anesthesia, the operation was performed. The dissection of the hernia sac was easily carried out and we could see the contents of the sac through its transparent wall (Fig. 2) which did not show any abnormalities. We carefully returned them into the abdominal cavity manually. The size of the fascial defect was 5×3 cm^2. The hernia sac was resected and the fascial defect was closed directly using #1

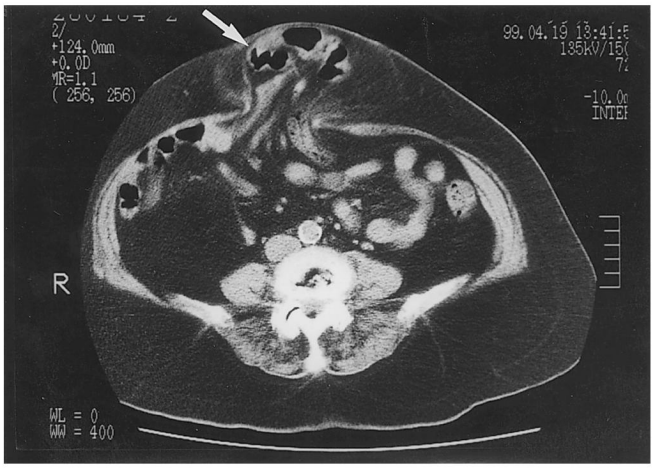

Fig. 1 Abdominal CT showing incarceration of bowel and mesentery into the sac of umbilical hernia (arrow).

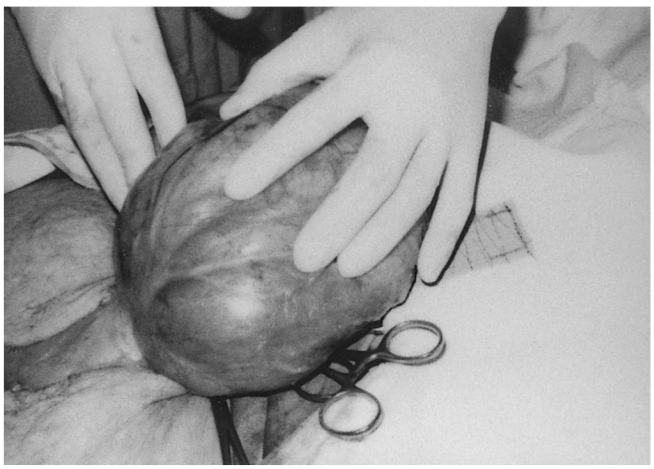

Fig. 2 Hernial contents were shown through its transparent wall.

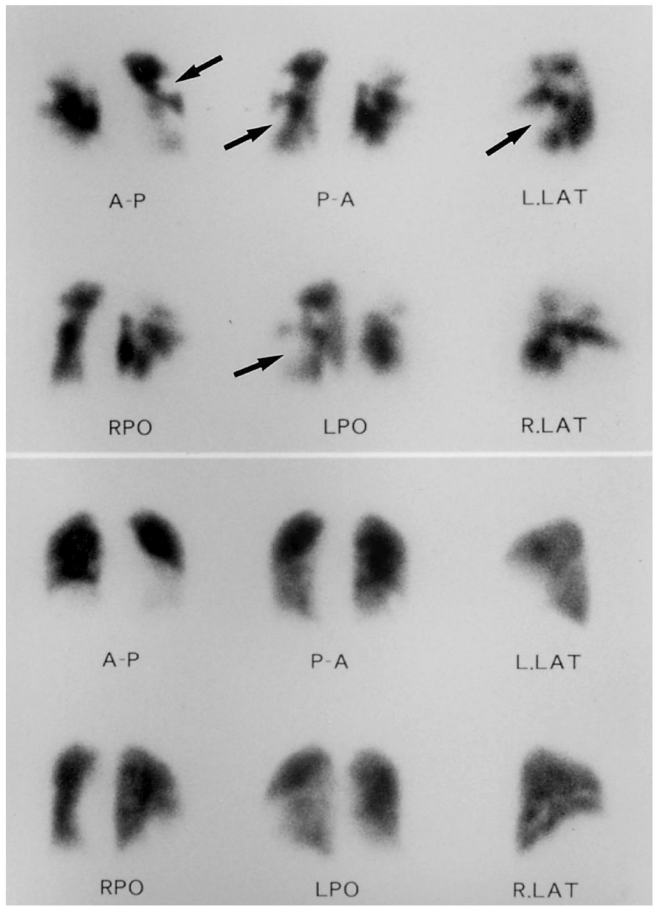

Fig. 3 A 99m Tc-MAA Pulmonary blood flow scintigram after 5 hours revealed wedge-shaped multiple perfusion defects of bilateral lung (arrows) [top]. A pulmonary blood flow scintigram taken three months after treatment, showing the remarkable improvement of the perfusion defect. [bottom]. (A-P : anteroposterior, LPO : left posterior oblique RPO : right posterior oblique, LAT: lateral)

SURGILONR® (tyco Healthcare) with severe tension. The duration of the operation was one hour and thirty-nine minutes, and blood loss was minimal. The intraoperative and immediate postoperative course were uneventful with good awakening.

She was quiet in bed with pain untill the next day. The second morning, when she got up, she suddenly complained of dyspnea, cold sweat and then became unconscious. Her respiratory rate was 10/minute, blood pressure was 80/40mmHg, and pulse rate was 140/minute. She was immediately intubated and ventilated. Laboratory data were, WBC,13.500/mm^3, CPK,892 IU/l, LDH,256 IU/l, GOT,45 IU/l, GPT,46 IU/l. An arterial blood gas showed acidosis and hypoxemia (e.g., pH 7.247, PO_2 69.3mmHg, PCO_2 51.5 mmHg, O_2SAT 90.8 percent, base excess -4.9 mmol/ℓ) on room air. Electrocardiograph (ECG) revealed only tachycardia and incomplete right bundle branch block. A chest X-ray demonstrated the slight elevation of both diaphragms. A pulmonary blood flow scintigram (^{99m}Tc-MAA) after 5 hours of onset showed wedge-shaped multiple perfusion defects in both lungs (Fig. 3,top). Therefore we diagnosed the case as acute PE, started anticoagulant therapy with heparin (10.000 units/day) and urokinase (120.000 units /day). She responded well to the initial treatment and we extubated her without difficulty the next day. We continued the same doses of heparin and urokinase for seven days and then the dose of heparin had not changed, here while that of urokinase

was changed as indicated 60.000 units/day for the next seven days. Oral administration of warfarin (1mg/day) was started after that. She was discharged from the hospital without sequelae on the 33rd postoperative day.

Three months later, a pulmonary blood flow scintigram showed the disappearance of the perfusional defects. (Fig. 3, bottom). We stopped warfarin six months later and now she is doing well.

DISCUSSION

Postoperative PE is a serious illness and often results in fatal complications. Approximately 10 percent of the patients with PE die within one hour[2] and mortality rate is fifty to sixty percent[3]. PE is considered to be one of the diseases, which we overlooked in postoperative sudden death, and often confirm at autopsies. We rarely encounter PE in postoperative cases of orthopedic, gynecologic and surgical operation.

Postoperative PE is considered to be associated to sex, obesity, long bed rest, lack of exercise, advanced age, oral contraceptives, varicose veins of lower extremities, malignant tumors and phlebothrombosis[4,5].

About 90 percent[6] of phlebothrombosis is caused by deep vein thrombosis (DVT). Virchow[7] suggested that the causes of DVT should be stasis of blood flow, a state of hyper-coagulability and injury to the vessel wall. These factors are still considered important in the pathogenesis of venous thrombosis. Other causes of phlebothrombosis were reported in lengthy intrapelvic surgery, in cases of antiphospholipid antibodies syndrome.

In our case, we thought that increased intra-abdominal pressure caused by returning large volume of bowels into the abdominal cavity and by direct fascial defect closure with severe tension resulted in the impairment of blood flow (stasis) and this gave rise to DVT with the predisposing factors of sex and obesity. However, the coagulation factor was within the normal range and antiphospholipid antibodies were negative.

Clinical symptoms[8] of PE were dyspnea, tachypnea, tachycardia, cyanosis, palpitation, chest pain, low blood pressure, wheeze and pyrexia.

Arterial blood gas is valuable for diagnosis of PE, and hypoxemia and reduction in arterial Pco_2 is highly suggestive of PE. In our case, Pco_2 was increased because of dyspnea with hypoventilation. In the presence of a massive PE, an ECG may show the signs of a right ventricular overload such as right bundle branch block and the S I Q III T III pattern signifying an S wave in lead I ,a Q wave in lead III and an inverted T wave in lead III. However, they are not universally present. The most common abnormality of an ECG is ST segment depression.

In laboratory findings, elevations of serum levels of GOT, LDH and bilirubin are often observed, but it is not specific for PE. An abnormality of CPK had been surmised to be due to muscular damages by the dissection of the hernia sac and/-or the closure of the fascial defect in our case.

For the diagnosis of PE, detection and visualization of perfusional defects by a pulmonary blood flow scintigram[9] is substantial. A chest enhanced CT, echocardiography and a pulmonary blood flow scintigram are useful for this purpose, especially when the patient is in a shock. If pulmonary ventilation scintigram is carried out simultaneously, the diagnostic accuracy is reported to be 97 percent[10]. It is usually impossible to do both scintigrams in a shock, however it is useful to detect the sites and shapes of occlusion even if testing only a pulmonary blood flow scintigram. Therefore, it is valuable to diagnose PE by testing pulmonary blood flow scintigram immediately as in our case.

A preoperative injection of low dose heparin (5000 units) and a postoperative continuous heparin injection (250 units/kg/day) for the prevention of postoperative PE, had almost no side effects and were reported to decrease DVT and PE in patients with high risk factors[11]. On the other hand however, the preventive anticoagulation therapy is still controversial in Japan due to the uncertainty of its effects and complications such as bleeding. The prevention of PE is however more substantial than treatment because of it's high mortality rate. In other preventive measures[12] such as elastic stockings, intraoperative intermittent pneumatic compression of lower extremity[13], enough drip were reported to give us good results.

Although PE might be a fatal complication, it's also a curable disease if it could be treated immediately after onset. Therefore every effort should be made not to overlook the patient's symptoms. The medical management for PE is primarily by anticoagulants (heparin) and a thrombolytic agent (urokinase) with cardiopulmonary intensive care. In our case we had a good result, because we started

administering heparin and urokinase within five hours, which is early enough for the thrombus to organize completely. A tissue plasminogen activator (t-PA) has a more fibrinolytic effect than urokinase[14], but it is associated with a high incidence of bleeding. Therefore we should be more careful in using t-PA.

Surgical measures such as venous thrombectomy[15] or interruption of the inferior Vena Cava[16] or pulmonary embolectomy should be applied individually for each patient.

In conclusion, if postoperative sudden onsets of dyspnea and unconsciousness with hypoxemia of unknown origin are encountered, examination and treatments should immediately be done keeping the presence of PE in mind.

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