

Purulent peritonitis and mediastinitis caused by iatrogenic perforation of the jejunum during application of mediastinal drainage in a 74-year-old woman after CABG – a case report



Ropne zapalenie otrzewnej i śródpiersia w wyniku jatrogennej perforacji jelita cienkiego podczas zakładania drenażu śródpiersia u 74-letniej pacjentki po CABG – opis przypadku

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Abstract

A case of a 74-year-old female admitted to our department for the planned procedure of coronary artery bypass grafting (CABG) is described. The patient was suffering from insulin-dependent diabetes and obesity. Her medical history revealed extensive surgical treatment in the abdominal cavity, such as: appendectomy, cholecystectomy, choledochoduodenostomy, right-sided adrenalectomy and total gastrectomy with oesophagoduodenostomy. The coronary revascularization procedure was performed with no early complications. However, a few days later, symptoms indicating a high jejunal fistula appeared. It was presumed that the jejunum was perforated during the routine application of mediastinal drainage, and it resulted in limited purulent peritonitis, and, in consequence, suppurative mediastinitis with sternum instability. The patient underwent two additional surgical procedures (closure of the jejunal fistula and sternum re-fixation with application of mediastinal irrigation drainage). In the following period extensive infection of surgical sites and respiratory insufficiency appeared. Only by applying topical negative pressure and long-lasting antibiotic therapy was it finally possible to control the infection. When partial wound healing was achieved the patient was referred to a district hospital for further treatment of the wounds.

Key words: coronary revascularization procedure, mediastinal drainage, iatrogenic jejunal perforation, suppurative mediastinitis.

Streszczenie

W pracy przedstawiono przypadek 74-letniej pacjentki przyjętej w trybie planowym w celu chirurgicznej rewaskularyzacji wieńcowej. Pacjentka obciążona była cukrzycą insulinozależną, a w przeszłości przeżyła kilka zabiegów operacyjnych (appendektomia, cholecystektomia, choledochoduodenostomia, prawostronna adrenalectomia, totalna gastrektomia z zespoleniem przetykowo-jelitowym) z powodu dość licznych i poważnych schorzeń jamy brzusznej. Po początkowo dobrym przebiegu po zabiegu rewaskularyzacji wieńcowej pojawiły się po kilku dobach objawy wysokiej przetoki jelitowej. Na skutek perforacji jelita cienkiego podczas zakładania rutynowego drenażu śródpiersia doszło do ograniczonego ropnego zapalenia otrzewnej, a następnie ropnego zapalenia śródpiersia z destabilizacją mostka. Pacjentka przeżyła 2 kolejne zabiegi (zeszycie przetoki jelitowej oraz refiksacja mostka z założeniem drenażu przepływowego śródpiersia) powikłane rozległą infekcją ran i niewydolnością oddechową. Dzięki zastosowanemu leczeniu miejscowemu (opatrunki podciśnieniowe) oraz wielotygodniowej celowanej antybiotykoterapii udało się opanować infekcję i częściowo wygoić rany pooperacyjne. Pacjentkę ostatecznie wypisano po prawie 3 miesiącach leczenia w naszym ośrodku do rejonowego oddziału chirurgicznego w celu dalszego leczenia ziarninujących ran.

Słowa kluczowe: chirurgiczna rewaskularyzacja wieńcowa, drenaż śródpiersia, jatrogenna perforacja jelita cienkiego, ropne zapalenie śródpiersia

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Case report

A 74-year-old obese female (BMI = 30.8) suffering from insulin-dependent type 2 diabetes was admitted to our department on 31 March 2010 with the diagnosis of triple vessel coronary artery disease. The medical history revealed extensive surgical treatment in the abdominal cavity, such as: appendectomy, cholecystectomy (1981), choledochoduodenostomy (1983), total gastrectomy with oesophagoduodenostomy – Roux type anastomosis (2004) due to a neoplastic process, and right-sided adrenalectomy (2007) due to Conn syndrome.

The procedure of on-pump coronary artery bypass grafting (CABG) was conducted as planned. Three aorto-coronary bypasses (LITA – LAD, SVG – IM, SVG – OM1) were implanted. The coronary revascularization procedure and the routine application of postoperative mediastinal drainage were performed in the standard fashion with no signs of early complications. The patient did not reveal any urgent symptoms in the abdominal region in the postoperative period. However, on the 7th postoperative day chyme appeared in the post-drainage wounds. This symptom indicated that the jejunum was injured, and inadvertent chest tube placement was presumed to be the causative factor (Fig. 1). The jejunal fistula was revealed by means of a contrast radiogram of the abdominal cavity (Fig. 2). Urgent laparotomy confirmed the presence of intestinal perforation in the area of the previously performed Roux anastomosis. Purulent limited peritonitis was also diagnosed. As a result of the jejunal perforation suppurative mediastinitis and sternal instability arose (Fig. 3). Five days after the laparotomy, re-fixation of the sternum was conducted, and re-thoracotomy with irrigation drainage was applied for a period of 7 days. In the following

period respiratory insufficiency appeared, which required prolonged mechanical ventilation. Moreover, superficial infection of the thoracic and abdominal surgical sites developed (Fig. 4), requiring topical negative pressure and hyperbaric therapy. However, the hyperbaric therapy was quickly terminated due to laryngological contraindications. By applying vacuum pack therapy, regular necrectomy, and systemic guided antibiotic therapy, the infection was fully controlled. Culture of the operative wounds revealed, among others, the following pathogens: *Klebsiella oxytoca*, *Enterococcus faecalis*, and *Candida* spp. The purulent process withdrew after nearly 40 days of treatment. The patient was discharged after 83 days of therapy in several surgical departments of our institution and was referred to a district hospital for the completion of wound healing.

Discussion

Poor outcome of coronary artery bypass grafting has several risk factors, such as: advanced age, female sex, high body weight, presence of diabetes mellitus, renal failure, emergent status of the procedure, previous CABG, or recent myocardial infarction (MI) [1]. In the case of the female patient presented in our paper the risk factors were

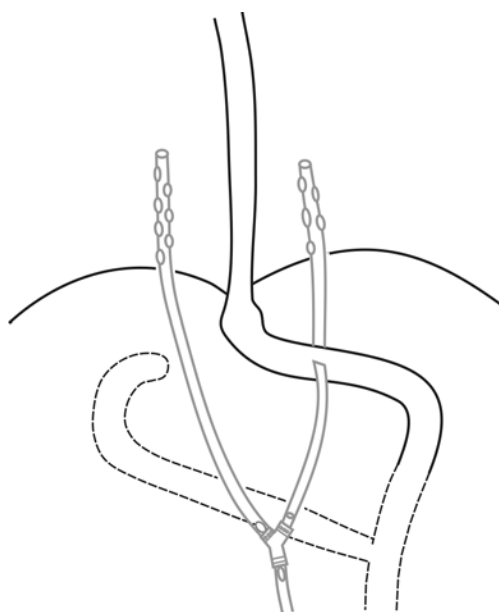


Fig. 1. Iatrogenic intestinal perforation. Schematic diagram



Fig. 2. Contrast radiogram of the abdominal cavity



Fig. 3. Mediastinitis with sternal dehiscence on CXR

as follows: age (74 years old), adult-type insulin-dependent diabetes, obesity (BMI = 30.8) and previous extensive surgical repair in the epigastric region. The above-mentioned surgical procedures may lead in consequence to changes in anatomical structures of the abdominal cavity, by formation of adhesions and scarification of the adjacent tissue. That was probably the main reason for the development of the iatrogenic jejunal perforation, especially as the perforation was situated in the area of previously performed intestinal anastomosis. Complications in the abdominal cavity following CABG have been described by many authors, but they mainly concerned the following: mesenteric ischaemia, abdominal aortic aneurysm, gastric cancer, chronic ulcer disease and gastrointestinal bleeding [2-5]. There are no data in the literature describing iatrogenic jejunal injury, and thus it was decided to present the above clinical case.

Conclusions

1. During cardio-surgical procedures performed in altered anatomical conditions of the epigastric region, it is much safer to apply drainage suprafascially or through the intercostal space.
2. Vacuum pack therapy is an excellent tool in the management of immobilized patients with extensive and deep wound infections with large drainage quantities.
3. Acute abdominal symptoms in patients after CABG are atypical in presentation; therefore proper diagnosis and treatment present a challenge.
4. In patients with previous extensive operations in the epigastric area it seems reasonable to extend routinely performed diagnostics by computed tomography imaging (CT) before commencing with the surgery.



Fig. 4. Healing status shortly before discharge from hospital

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