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Acute complicated calculous cholecystitis after bilateral lung transplantation

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The paper describes a case of successful treatment of acute destructive calculous cholecystitis after bilateral lung transplantation.

Keywords: acute calculous cholecystitis, lung transplantation, surgical treatment

Lung transplantation is the only option to treat the end-stage chronic obstructive pulmonary disease (including bronchiectasis), idiopathic pulmonary fibrosis, cystic fibrosis, and pulmonary hypertension. An increased bile lithogenicity in combination with drug immunosuppression therapy after transplantation raise the risk of biliary complications [1]. Abdominal surgical complications occur in 28% of patients after heart transplantation or combined heart-lung transplantation [2], and in 10% after lung transplantation [3]. Abdominal diseases in patients on immunosuppressive, anti-bacterial, and anti-viral therapies are characterized by atypical course with "vague" clinical pattern and severe complications [4]. Most investigators [5] believe that preventive cleansing of biliary tree is not indicated in the patients on the waiting list for kidney transplantation or those after transplantation. There is no standardized tactics for cholelithiasis

treatment in patients with the end-stage heart disease, and those after heart transplant. Three mutually exclusive points of view still exist: to perform a planned laparoscopic cholecystectomy before heart transplantation [6], after it [7], or at the onset of clinical symptoms of cholelithiasis complications, including such as hepatic colic, acute cholecystitis, and biliary pancreatitis [8]. Elective cholecystectomy is well tolerated by the patients after heart transplantation [9], the laparoscopic approach being the preferred one [10]. There are only few reports in literature on the treatment of cholelithiasis and its complications after lung transplantation [1, 3, 10]. Therefore, we believe it appropriate to present a clinical case report from our experience.

Patient T., 44 years old (medical record #2376814), was referred to the N.V.Sklifosovsky Institute for Emergency Medicine on 18.09.2014 with complaints on an occasionally occurring moderate epigastric pain, the body temperature elevation up to 38° C once in 3 days.

From the previous history we revealed that on December 5, 2013, the patient underwent bilateral lung transplantation for severe bronchiectasis lung disease with chronic respiratory failure, the transplantation was performed in the N.V.Sklifosovsky Institute for Emergency Medicine. The postoperative period was without major complications, and on the 18th day after surgery, the patient was discharged home to be followed-up by a pulmonologist at the local clinic on residence. Gallstone disease and cholecystolithiasis had been first diagnosed by ultrasonography several years before lung transplantation. There were no clinical symptoms of gallstone disease.

After lung transplantation, the patient was on immunosuppressive therapy (Prograf, 3 mg/day; methylprednisolone, 16 mg/day; mycophenolate mofetil, 2000 mg/day), received antibacterial, antiviral and antifungal drugs

(azithromycin, 750 mg/week; co-trimoxazole, 960 mg/day; valganciclovir, 900 mg/day; voriconazole, 400 mg/day).

In July 2014, the patient reported an episode of moderate pain in the epigastric area that was controlled by a single dose of No-Spa. There was no nausea, vomiting, or fever. In August 2014, the pain attack repeated, the patient had occasional rises in the body temperature up to 38° C (once every 3 days). The patient was evaluated at an out-patient setting, the physical examination included abdominal and kidney ultrasonography, esophagogastroduodenoscopy. The surgeon's and gastroenterologist's examination did not reveal any acute abdominal surgical diseases. It should be emphasized that hematology and biochemistry blood tests gave normal results with one exception (hemoglobin 96 g/L) suggesting moderate anemia.

On September 9, the patient was hospitalized with persisting fever to a local public hospital for further observation. Ultrasonography revealed the signs of acute phlegmonous calculous cholecystitis, and perivesical abscess. On September 18, 2014, the patient was transferred to the Department of Urgent Hepato-Biliary Surgery of the N.V.Sklifosovsky Institute.

The patient was examined on admission. Ultrasonography revealed the signs of infiltration in the right subhepatic space involving mesogastrium, acute calculous gangrenous-perforating cholecystitis, perivesical abscess. On the day of admission the patient underwent a percutaneous transhepatic microcholecystostomy and a percutaneous transhepatic drainage of the perivesical abscess under ultrasonographic guidance using a single-staged method with Pigtail 9Fr drainage system; the procedures being performed under local anesthesia. The drainage system evacuated 50 ml of purulent discharge from the gallbladder, and 100 ml of

similar purulent discharge from the abscess cavity; the microbiology study of pus showed *Klebsiella pneumonia* with a titer of 10^7, sensitive to imipenem.

Fistulography (see Fig.) demonstrated the signs of a gall bladder internal fistula with communication to the right curvature of the colon through the abscess cavity, calculous cholecystitis, timely entering of the contrast agent to the duodenum, no evidence of choledocholithiasis.

A B

Fig. Fistulography:

A – Gall bladder;

B – Perivesical abscess

The abscess drain was replaced by a larger-bore tube (30 Fr) in a step-wise fashion, the antibiotic therapy was continued (imipenem, 1000 mg/day), as were the detoxification therapy, the fractional lavage of the abscess cavity and the gall bladder.

The patient's condition improved, the pyo-intoxication symptoms were controlled, however, that did not result in the abscess cavity reduction, nor in the fistula cure. The patient's perivesical infiltrate also persisted involving a

hepatic flexure of the colon that made the differentiation of organ walls hardly possible. The case was discussed at the concilium of specialists that made the following decisions: 1. To operate the patient using the laparotomy approach. 2. To make the resection outside the infiltrative focus in order to avoid the dissemination of the purulent process. According to the decision taken at the concilium, on October 22, 2014, the patient was operated on. Using endotracheal anesthesia, we performed laparotomy, cholecystectomy, and right hemicolectomy with "end-to-side" ileotransverse colon anastomosis. Samples of the colon, the small intestine, and the gall bladder were sent to histological examination that gave the following results: "the wall of the gallbladder having multiple sclerosis across all layers, edema, diffused and focal lymphocyte infiltration with a moderate admixture of plasma cells, macrophages, and few granulocytes outside the abscess, the sclerosis and inflammatory infiltration in the adjacent area being more pronounced; the infiltration contains large numbers of granulocytes. The walls of both abscesses contain fibrous tissue, the lumen is laid with amorphous acellular masses, pyo-necrotic detritus; there is the colonization of the fungus mycelium. Inflammation affects the wall of the colon from outside; the small and large intestine, and the appendix wall outside the abscess wall are without inflammatory abnormalities. Findings in the external intestinal wall in the fistula area are typical of the abscess wall pattern; the mucosal damage is secondary, of short-term standing. There is chronic calculous cholecystitis in exacerbation. Pericystic and intercellular abscesses contain fungus mycelium colonization, drained into the colonic lumen". After surgery, the patient continued antimicrobial (Meronem, 3 g/day) and immunosuppressive therapy. The early postoperative period was uneventful.

At day 7 after surgery, the patient developed the signs of systemic inflammatory response with fever up to 39° C, leukocytosis $14x10^9$/L with the shift to myelocytes (7%) in the white blood cell differential count. At examination, no findings of intra-abdominal pyo-septic inflammation were seen. A superficial suppuration of the laparotomy wound was found. The skin sutures were removed and the topical treatment was initiated. Microbiological study of wound discharge revealed *Klebsiella pneumonia*. The wound gradually cleared itself; "sluggish" granulations appeared.

However, the patient's hyperthermia still persisted. Ultrasonography revealed localized fluid collections in the anterior abdominal wall and both gluteal areas. At day 20 after surgery, the abscesses of the anterior abdominal wall, and both gluteal areas were incised and evacuated yielding 30, 80, and 60 ml of thick yellow-greenish pus, respectively. Microbiology study of the abscess contents detected *Klebsiella pneumonia*. No flora growth was found in blood cultures. A systemic antibiotic therapy with sulperason (4 g/day) was initiated to control the dissemination of purulent process. The topical therapy was continued. The intoxication was gradually controlled, purulent cavities cleared themselves and healed by secondary intention.

Further postoperative course was complicated by a right lower lobe pleuropneumonia. The antibacterial therapy was supplemented with meropenem (2 g/day), tigacil (100 mg/day); the patient received the course of antifungal therapy with Vfend (400 mg/day), and inhalations with colistin, and amphotericin B. The microbiology of sputum and bronchial washings showed no abnormal flora.

The patient was discharged from hospital in a satisfactory condition for outpatient follow-up care on the 92^{nd} day from hospital admission.

Conclusion

Due to a mandatory immunosuppressive therapy, the patient had a non-typical course of acute calculous cholecystitis. Mild to moderate pain and occasional rises in the body temperature hampered a timely diagnosis of gallstone disease complications. Immunosuppression led to multiple infection complications with the pathogen non-typical for abdominal surgery, and all those delayed the healing process. The authors believe that the described clinical case report serves an evidence in favour of planned cleansing measures for chronic surgical diseases in patients undergoing lung transplantation.

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