A rare disease mimics postoperative bile leakage: Invasive aspergillosis

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ABSTRACT

Aspergillus fungi can cause serious infections, including intra-abdominal infection, particularly in patients with compromised immune system. Described in the present report is case of 46-year-old female patient who had undergone laparoscopic cholecystectomy (LC) at another healthcare facility. In early postoperative period, she had increasing complaints of swelling, nausea, and vomiting. On postoperative 19th day, she was referred to our clinic with diagnosis of acute abdomen. Surgery was performed with suspected possibility of bile leakage. However, pathological examination of soft, yellow-green mass found in subhepatic space determined it was fungus ball caused by fungi of the genus Aspergillus. Patient was diagnosed postoperative intra-abdominal aspergillosis (IAA).

Key words: Invasive aspergillosis; laparoscopic cholecystectomy; postoperative bile leakage.

INTRODUCTION

Aspergilli are hyphal fungi that are widely distributed in nature; their natural habitat is soil and decaying plant material. Having rich enzyme systems, they can decompose and use almost all types of organic material, and they can grow even at very low moisture levels compared to other microorganisms.[1]

They do not need humans as a host to complete their life cycle, but under appropriate conditions they can become pathogenic in humans. They are a type of fungi present with high density in the air, and they can be carried anywhere by means of conidia that are dispersed in the atmosphere. They often cause respiratory tract infections in humans; rarely, gastrointestinal tract, solitary abdominal organs, and lymph nodes may also be attacked. Although distribution may occur easily through blood, especially in immunosuppressive patients, particularly after construction or renovation work in hospitals, contamination of surgical instruments may cause deep abdominal surgical infections.[2]

Described in the present report is case of intra-abdominal aspergillosis (IAA) in patient who underwent laparoscopic cholecystectomy (LC) at another medical center and was subsequently admitted to our hospital in postoperative period with suspicion of leak.

CASE REPORT

LC for symptomatic cholelithiasis was performed on 46-year-old female patient at another medical facility. After epicrisis and talking with surgeon who performed the operation, patient was assessed for right upper quadrant (RUQ) pain. Preoperative routine laboratory values had been normal, ultrasonography showed multiple millimetric stones in gallbladder, and due to symptomatic gallbladder disease, operation was performed under elective conditions. Surgery was in accordance with standards, and exploration of abdomen during operation found no pathology. Drain left in abdomen after

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operation was removed on first postoperative day with no significant output, and on second day, patient was discharged without problems. However, patient began to complain of bloating in succeeding days. Her complaints gradually increased, and she was hospitalized again on seventh postoperative day because of onset of nausea and vomiting. Medical treatment was initiated, but clinical tableau did not improve. Due to continued increase in intra-abdominal fluid and development of acute abdominal findings, patient was referred to our clinic on 19th day.

Patient looked pale and dehydrated. Blood pressure was 125/70 mmHg, heart rate was 84/bpm and temperature was 37.2 °C. Abdominal examination revealed sensitivity and rigidity, particularly in RUQ.

Laboratory analysis indicated moderate liver enzyme disorders: aspartate aminotransferase (AST) and alanine aminotransferase (ALT) values were 1.5 times higher than normal, and alkaline phosphatase (ALP) and gamma-glutamyl transpeptidase (GGT) values were approximately 2 times higher. Bilirubin values and other biochemical parameters were normal.

In postoperative period follow-up, clinical tableau resolved. Cholangiography was taken on the 21st day and as leakage was still not observed, drainage catheter was removed. Pathology result after examination of mass led to diagnosis of aspergillosis.

**DISCUSSION**

Aspergillus species can cause allergies and mycotoxicoses, as well as infections called aspergillosis. As the disease is generally seen in individuals with immune system disorders, and is created by infectious agents suspended in the air, it often leads to pulmonary infections. However, skin, adrenal glands, central nervous system (CNS), liver, spleen, and gastrointestinal system involvement can also be seen in individuals with immune system disorders. As in present case, in individuals with normal immune system, it has also been reported that IAA may develop as result of operating room sterilization problems.

Gastrointestinal presentation of invasive aspergillosis (IA) is unusual. In a study conducted by Hori et al. that examined an autopsy series, it was reported that small intestine-localized gastrointestinal (GIS) aspergillosis was detected in 37 of 107 cases examined. GIS aspergillosis, a form that has high mortality rates, is characterized by mesenteric artery invasion, intravascular thrombosis, and tissue ischemia. Clinical-
ly, it can present with fever, abdominal pain, ileus, peritonitis, bloody diarrhea and hematochezia. In addition, apart from gastrointestinal tract, urinary system may also be affected.

Literature survey indicated that the present case is first to develop after LC. Patient began to complain about bloating on second postoperative day, and 5 days later, nausea and vomiting were added to tableau. However, such findings can develop in all abdominal infections, so they cannot be expected to bring IA to mind.

A. fumigatus, which is responsible for 90% of cases of IA, has germination rate of 5–12 hours. It has been shown that with proper humidity and temperature, it can reach 4–8 times its normal size. As a result, it may take days or weeks for disease to colonize and emerge in patients. For example, a disseminated disease was reported to occur in a 3-week period for a patient with heart transplantation, while in another laparotomy patient, period was 48 hours. Routine laboratory tests and imaging performed at another medical center before operation on present patient revealed no pathological findings, other than cholelithiasis. Abdominal distention started 2 days after surgery, and clinically worsening patient was then referred to our hospital 19 days after operation. Although length of time required for aspergilli to multiply, proliferate, and disseminate disease varies, the onset of symptoms after 48 hours observed in present case, their progressive increase, and becoming very apparent in about 3 weeks correlates to GIS symptoms seen with aspergillosis.

When patient underwent emergency operation, a mass of approximately 10x10 cm, well-circumscribed, yellow-green in color and of gelatinous consistency was observed in subhepatic space of abdomen and subsequently sent to pathology. There was also about 1500 cc of similarly colored liquid in the abdomen. Intraoperative bile leakage was considered and surgical treatment was applied. Fungi that are derivative of Aspergillus produce pigments with various colors. In particular, it is known that some Aspergillus conidia produce green pigment. When we re-evaluated the patient retrospectively, we considered that pigment produced by the fungus may have caused the yellow-green color of the mass and that the greenish fluid in the abdomen had not been bile.

Aspergilli may cause deep abdominal surgical infections, especially after construction or renovation work in hospitals, due to contamination of surgical instruments. In the present case, when we interviewed the surgeon who first operated on the patient, we learned that there were renovations ongoing in the hospital at that time. This also explains patient’s clinical picture. Additionally, lack of pathology observed in patient on physical examination, laboratory tests, and imaging before initial operation and progressive worsening of clinical tableau after the operation support idea that lesion occurred secondary to bad sterilization.

Another important issue is early diagnosis of aspergillosis and starting appropriate treatment as soon as possible. Especially in patients with immune system disorders, this is of vital importance. Combined use of microscopic examination and culture results facilitates clinician’s diagnosis. However, it should be remembered that blood cultures of patients are rarely positive, and even in cases of pulmonary involvement, bronchoalveolar lavage (BAL) fluid culture is positive only in advanced patients; diagnosis is generally immediately before patient death. Kusne and al. reported in their study that even in pulmonary aspergillosis cases, 79% are reported in cultures. Therefore, in GIS aspergillosis, except for blood cultures, it is mostly diagnosed with biopsies and histological examination of biopsy material that was removed surgically. If we had thought the yellow-green fluid might have been due to aspergillosis, culture of the fluid might have helped.

Invasive fungal infection such as aspergillosis may occur as result of improper sterilization conditions. It can be simply and effectively prevented with more attention to sterilization. Es-
particularly in the presence of underlying predisposing condition, it should be kept in mind that these infections can imitate bile leakage, one of the common complications of LC, because of the pigments produced by such fungal infections.

Conflict of interest: None declared.

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Ameliyat sonrası safra kaçağını taklit eden nadir bir hastalık: İnvaziv aspergillozis

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Anahtar sözüklər: Ameliyat sonrası safra kaçağı; invaziv aspergillozis; laparoskopik kolesistektomi.

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