

PROCEEDINGS

ACUTE APPENDICITIS WITHOUT APPENDICITIS

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ABSTRACT

INTRODUCTION: A clinical, imaging, and laboratory constellation for acute appendicitis requires operative treatment to avoid life-threatening complications such as perforation and peritonitis. The latter, in turn, are an absolute indication for surgical intervention. Although it does not change the operative approach, in rare cases, the cause of the condition is appendicular diverticulitis—usually an incidental, pathological diagnosis with a literature frequency of 0.004–2.1%. The differential diagnosis of diverticula of the appendix in patients with acute appendicitis is important because of the higher risk of developing the above complications, but also because of primary neoplasms of the appendix. The latter are rare Tu with a frequency of 0.2–0.5% of all GIT neoplasms. Among them, carcinoids are the most common and are characterized by slow growth and a long asymptomatic course. However, they often present with the picture of acute appendicitis with/without perforation, abscess or peritonitis.

MATERIALS, METHODS AND RESULTS: The study was single-center, retrospective. Three patients with histologically verified appendicular diverticulitis with perforation and periappendicular abscess are presented, necessitating laparoscopic appendectomy (1 case), conventional appendectomy (1 case), right hemicolectomy (1 case). Adenocarcinoma of the appendix was proven in two patients with laparoscopic appendectomy.

After verification of the permanent histological result and after discussion with the hospital Oncology Committee in the first case, the operation performed was determined to be sufficient in view of the oncological radicality. In the second case, reoperation with right hemicolectomy was recommended for histological evidence of T3 adenocarcinoma of the appendix. An appendicular mucocele was pathologically proven in one of the patients after laparoscopic appendectomy.

CONCLUSION: The differential diagnosis of diverticulitis of the appendix in patients with acute appendicitis is important due to the higher risk of developing the above complications, but also because of primary neoplasms of the appendix. The latter are rare Tu with a frequency of 0.2-0.5% of all GIT neoplasms, which can also present with the picture of acute appendicitis with/without perforation, abscess or peritonitis.

Keywords: *acute appendicitis, diverticulitis of the appendix, primary neoplasms of the appendix*

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Received: July 2, 2023

Accepted: September 14, 2023

INTRODUCTION

The clinical, imaging, and laboratory constellation for acute appendicitis requires operative treatment to avoid life-threatening complications such as perforation and peritonitis. The latter, for their part, are an absolute indication of surgical intervention. Even though the operative approach is not changed, in rare cases, the cause of the condition is appendicular diverticulitis—always an accidental, pathoana-



tomical diagnosis with a frequency according to literature data of 0.004–2.1%. The differential diagnosis of diverticulitis of the appendix in patients with acute appendicitis is important because of the higher risk of developing the above complications, but also because of primary neoplasms of the appendix. The latter are rare Tu with a frequency of 0.2–0.5% of all GIT neoplasms, which can also present with the picture of acute appendicitis with/without perforation, abscess or peritonitis.

MATERIALS AND METHODS

Six patients operated on the basis of preoperative data for acute appendicitis in volume laparoscopic appendectomy (4 cases), diagnostic laparoscopy, conversion with conventional appendectomy (1 patient), right hemicolectomy (1 patient) are presented.

Clinical and laboratory studies with an inflammatory constellation were conducted. In two of the patients, CT data were found for acute perforated appendicitis with a formed periappendicular abscess. In one patient, again during a preoperative CT of the abdomen, an unclear ileocecal formation was found with the presence of an abundant amount of free fluid in the small pelvis and interpleural area. In one of the patients, an imaging study was not performed due to the clearly expressed clinical picture of local peritonitis in the right abdominal half with laboratory data for leukocytosis (23×10^9 G/L) and highly elevated values of CRP=160 mg/L.

In the remaining two patients, abdominal ultrasound was performed as part of a diagnostic algorithm in the Emergency Department. Ultrasonographically, ileocecal striated fatty tissue was described with evidence of free fluid in the lesser pelvis and a high suspicion of appendicitis.

After consultation with a surgeon and against the background of amnesic, clinical and laboratory data for an inflammatory process, the patients were hospitalized at the Clinic for Operative Treatment for acute appendicitis (Table 1).

RESULTS

In all described cases, a permanent histological examination of the removed preparation was carried out (in two of them, additional immunohistochemical examinations were carried out). Thus, in three patients, appendicular diverticulitis with perforation and periappendicular abscess was pathoanatomically verified, necessitating laparoscopic appendectomy (Patient 1 from Table 1), conventional appendectomy (Patient 2 from Table 1), right hemicolectomy (Patient 3).

Adenocarcinoma of the appendix was proven in two patients with laparoscopic appendectomy. After verification of the permanent histological result and after discussion with the hospital Oncology Committee in the first case, the operation performed was determined to be sufficient in view of the oncological radicality (Patient 4 from the table).

Table 1. Patients.

	Patient 1	Patient 2	Patient 3	Patient 4	Patient 5	Patient 6
Gender	Man	Man	Woman	Woman	Man	Man
Age	42	58	61	60	74	68
AD/ PI	H	no	mastectomy for Ca	no	AD, BPH, glaucoma, adenoCa	no
Histological result	diverticulitis with perforation and abscess	diverticulitis with perforation and abscess	diverticulitis with perforation and abscess	T1N0M0	T3N2M0	mucocoele
Operation, type	Lap-app.	App.	Hemicolectomia dex.	LAP- app.	LAP-app + hemicolectomia dex	LAP-app.

AD—accompanying diseases; PI—past illnesses; H—hypertension; Ca—carcinoma; BPH—benign prostatic hyperplasia; LAP-app.—laparoscopic appendectomy; App.—conventional appendectomy.

The patient was referred for dispensary observation due to the obtained results: from the pathological examination, incl. conducted immunohistochemical analysis with evidence of T1 adenocarcinoma. Postoperatively, a fibrocolonoscopy was performed (1 month after the laparoscopic intervention) without data of additional pathological findings, and an abdominal CT without data on dissemination of the process (T1N0M0).

In Patient 5 from Table 1, a reoperation was recommended with a right hemicolectomy (carried out in the second stage with locoregional lymph dissection) and adjuvant chemotherapy due to histological evidence of T3 adenocarcinoma at the base of the appendix with locoregional lymphadenomegaly but without evidence of hematogenous dissemination (pT3N2(5/18)M0).

In one of the patients (Patient 6), after laparoscopic appendectomy, an appendicular mucocele was pathoanatomically proven (after additional immunohistochemical tests determined it as benign—low-grade appendiceal mucinous neoplasm (LAMN))—a cystic formation originating from the appendix with phlegmonously inflamed walls without signs of perforation, without evidence of lymphadenomegaly and without involvement of the cecum. Only appendectomy with lavage and drainage was performed.

DISCUSSION

Appendiceal diverticulitis is a rare disease with an incidence of up to 2.1% and clinical features resembling conventional acute appendicitis. Unlike the latter, however, appendicular diverticulosis can lead to an early and higher rate of perforation and, therefore, a higher mortality rate than acute appendicitis alone (1–4).

Appendiceal diverticula are mostly discovered incidentally by imaging and/or intraoperatively by histological diagnosis. Despite the paucity of specialized literature on the subject, several studies consider appendicular diverticulosis as precancer (5–9).

On the other hand, neoplasms of the appendix are also rare and are usually an incidental pathoanatomical diagnosis (according to literature data, 0.9–1.4% of all appendectomies are due to acute appendicitis, but with a tendency to increase in frequency, which varies according to some authors up to 5.9%,

or even up to 12%, in patients with an inflammatory mass of the appendix) (10–13).

Primary adenocarcinoma of the appendix is a rarely diagnosed malignancy, accounting for less than 6% of neoplastic lesions of the appendix and less than 0.5% of all gastrointestinal malignancies. Like other appendicular neoplasms, they are most often an incidental finding after appendectomy (13–16).

The development of adenocarcinoma depends directly on the anatomical features of the appendix, which predisposes to early spread and perforation. It is often associated with synchronous and metachronous colorectal or extraintestinal cancer. According to the literature, surgical treatment is right hemicolectomy as a primary procedure in case of preoperative or intraoperative diagnosis or as a secondary procedure, two to three weeks after appendectomy, when microscopic examination of the preparation reveals the presence of adenocarcinoma (12,16).

Appendicular mucocele is also a rare disease with a reported incidence of 0.2 to 0.3%, histologically varying from benign to malignant with a high risk of developing pseudomyxoma of the peritoneum. In the presence of evidence of malignancy (metastatic lymph adenomegaly, perforation with intraperitoneal dissemination and affected base of the appendix (positive resection margins), the method of surgical treatment is right hemicolectomy with lymphatic dissection, while appendectomy is recommended in cases of benign mucocele (17–19).

CONCLUSION

Appendicular diverticulitis is a rare and often overlooked disease. The differential diagnosis in patients with acute appendicitis is important because of the higher risk of complications such as perforation and the development of neoplasms. The latter, in turn, can be a diagnostic and therapeutic challenge due to their low frequency, which is associated with a poor prognosis, especially in older patients with clinical evidence of acute appendicitis with a longer history of complaints and the presence of a periappendicular tumor mass.

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