

Granulomatous Appendicitis: An Uncommon Cause of Acute Abdomen

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Background	A patient presented with acute abdomen and underwent surgery. Acute appendicitis was suspected and an enlarged appendix was removed. Though the patient had an uneventful recovery, pathology revealed acute granulomatous appendicitis.
Summary	A female patient arrived at the emergency department and presented with abdominal pain and acute abdomen was suspected. Laboratory exams were normal, but imaging studies revealed free liquid in the abdomen. At the time of the surgery, an enlarged appendix was found, so an appendectomy was performed. After surgery, the patient fully recovered and was discharged without any complications. Pathology revealed acute granulomatous appendicitis; this type of pathology is very rare, and due to this high variability of clinical presentation, a prompt and effective treatment was needed for successful patient recovery.
Conclusion	Acute appendicitis is the most common abdominal emergency; we present a case of a suspected acute appendicitis that required surgical resection. This case was thought to be one of simple acute appendicitis; however, acute granulomatous appendicitis was discovered during the pathology exam. This discovery highlights that appendicitis, while a common condition, is caused by many etiologies, from acute forms that require appendectomy to a severe acute abdomen that requires surgical resection. Surgeons should always be prepared to face multiple kinds of surgical presentation of the same pathology, and the intraoperative decision should always be to benefit of the patients in the reduction of morbidity and mortality.
Keywords	Granulomatous appendicitis

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Case Description

Granulomatous appendicitis is an uncommon cause of acute abdomen. Its etiology can be infectious, and noninfectious. The clinical picture can present as an acute abdomen.¹ It is very rare, occurring in about 0.1–2.0 percent of all appendectomy specimens;² granulomatous appendicitis occurrence has ranged from 0.14 to 0.30 percent in Western countries, and from 1.3 to 2.3 percent in resource-poor countries³—this higher incidence in poorer countries is possibly because of the high prevalence of tuberculosis.²

Our patient is a 33-year-old female with a past medical history of rheumatoid arthritis and hypothyroidism. She presented to the emergency department with fever and intense abdominal pain, having experienced one week of abdominal pain and asthenia. Upon presentation, she was found to be hypotensive but responded to crystalloid resuscitation. She had no leukocytosis or evidence of acute blood loss anemia. Ultrasound demonstrated free fluid in the abdomen, but the appendix couldn't be seen. The patient was taken for diagnostic laparoscopy, where we found serous fluid in the abdominal cavity, multiple lymph nodes at the root of the mesentery, and an enlarged appendix. An appendectomy was performed, and culture of the fluid was taken. Microbiology reported a multi-sensitive *E. coli*. The patient was treated with six days of ampicillin and had an uneventful recovery. When seen in follow-up two weeks postoperatively, the patient was doing well and had no specific symptoms. The pathology report described a granulomatous appendicitis (Figure 1).

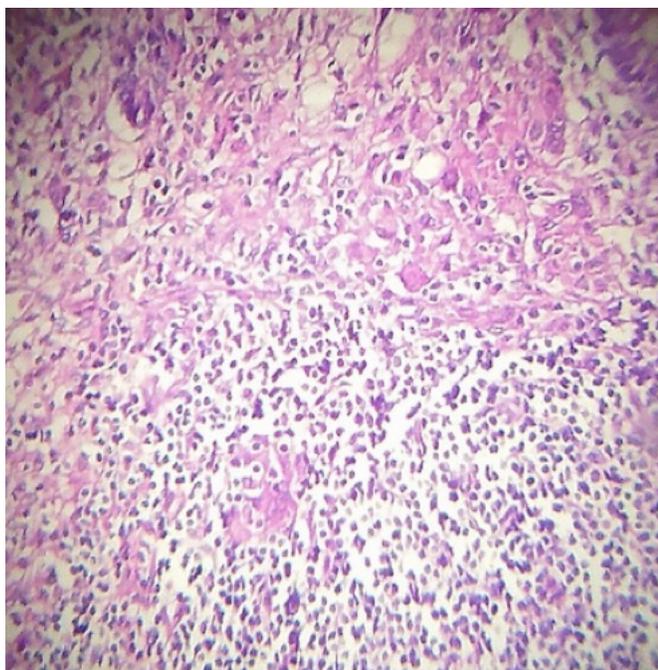


Figure 1. Granulomatous appendicitis, Submucosa granulomas surrounded by necrotic center around histiocytes.

Discussion

Acute appendicitis is the most common surgical emergency worldwide, with an incidence of 89 cases per 100,000. With an estimated lifetime risk of seven to eight percent,¹⁰ it is more frequently seen in young male patients.⁸ However, due to an increase in the life expectancy in recent years, more cases are seen in the elderly.⁹

Although a very common disease, its etiology can vary⁸ from, direct luminal obstruction from fecolith, lymphoid hyperplasia, or in rare cases an appendiceal or a cecal tumor.¹⁰ Appendiceal tumors are rare and commonly found incidentally on appendectomy specimens from patients who presented with acute appendicitis and ranges from 0.9 to 1.7 percent. Acute appendicitis may also be complicated by perforation and can develop an inflammatory mass in 2–10 percent of cases.¹²

Although acute appendicitis can present in diverse clinical presentations, the proposed treatment is usually the same, appendectomy.⁸ Even though there are numerous trials for antibiotic treatment for acute appendicitis, appendectomy remains the standard of care for the majority of patients with acute appendicitis. Antibiotic treatment might be used as an alternative treatment in specific patients or conditions when surgery is contraindicated.¹⁰

Diagnosis is still based on clinical judgment⁸, laboratory tests are used to supplement patient history and clinical examination. Currently, no inflammatory markers can identify appendicitis or granulomatous appendicitis with high specificity or sensitivity¹⁰. The surgical approach for appendicitis is variable, however, in clinical settings where surgical expertise and equipment are available, laparoscopic appendectomy appears to be advantageous.¹¹

Granulomatous appendicitis is a rare condition that may be discovered incidentally in a patient with a clinical presentation of acute appendicitis. Occurring in about 0.1 percent to 2.0 percent of all appendectomy specimens.¹

Various infectious agents (*Yersinia* spp., *Mycobacterium tuberculosis*, and *Schistosoma* spp.) and non-infectious factors (Crohn's disease and sarcoidosis) have been implicated as causative factors of this condition.¹ In the tropical and subtropical regions, infections are the major cause of granulomatous appendicitis, and intestinal Tuberculosis and intestinal parasitic infestations are the main causes.²

Since appendicitis is the most common surgical emergency and the diagnosis of acute appendicitis is predominantly a clinical one⁵, acute appendicitis was suspected in our patient. Imaging methods do not provide specific data for granulomatous appendicitis and abdominal ultrasound can be interpreted as acute appendicitis.⁶ Surgical treatment is curative, however, it is advisable to follow and counsel patients because of the possibility of developing Crohn's disease, although this only occurs in a minority of cases (5-10 percent).⁷ Distinguishing idiopathic granulomatous appendicitis from early Crohn's disease, which affects only the appendix, is difficult. A definitive diagnosis can only be made after long-term follow-up.⁴

Classic pathological analysis of granulomatous appendicitis usually reveals the presence of caseating granulomas and Langhans giant cells as it was found in our patient.³

Our patient underwent surgery and recovered well, however, pathology revealed acute granulomatous appendicitis. There was no evidence of malignancy, parasites or foreign bodies. And since our patient was suspected of acute abdomen and didn't have any respiratory systems chest X-rays weren't performed, but it would have been a good initiative due to the great association between acute granulomatous appendicitis and tuberculosis.

Although Yersinia serology was not performed, it would seem an unlikely candidate as the patient had a diarrheal illness. The patient was felt to have idiopathic acute granulomatous appendicitis, which has a favorable prognosis with appendectomy being curative for the majority of cases. Long-term follow-up is required to identify Crohn's disease.

Our case highlights the importance of close follow up after surgical procedures since the great variability of clinical presentation and surgical options for a single pathology as rare as acute granulomatous appendicitis can mimic a common one as acute appendicitis.

Conclusion

Acute appendicitis is the most common abdominal emergency, we present a case, of a suspected acute appendicitis that required surgical resection. It was thought to be a case of simple acute appendicitis however on the pathology exam acute granulomatous appendicitis was discovered, this highlights, that appendicitis even though common is caused by many etiologies, from acute forms that require appendectomy to a severe acute abdomen that requires surgical resection.

Surgeons should always be prepared to face multiple kinds of surgical presentation of the same pathology and the intraoperative decision should always be in the benefit of the patients to reduce the morbidity and mortality.

Lessons Learned

Intraoperative decision making and close follow up after surgical procedures are critical, surgeons always have to be aware of different forms of presentation of various pathologies even the ones that we are not used to seeing on daily basis.

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