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Chronic appendicitis: the process from pre-diagnosis to pathology

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Abstract. – OBJECTIVE: Chronic appendicitis (CA) is a rare medical condition. CA is characterized by a less severe and almost continuous abdominal pain. It has a clinical picture lasting longer than 1-2 days and extending over weeks, months, even years. The exact etiology of CA is unclear. Certain resources have reported it as the cause of partial obstruction in the lumen of the appendix.

PATIENTS AND METHODS: Our study was carried out with the approval of the Clinical Research Ethics Committee. A retrospective analysis was performed between August 2018 and March 2020.

RESULTS: It was determined that 207 appendectomies were performed during the retrospective scan period. The data of 182 of these patients could be accessed fully and we could get answers to the criteria we thought. Only 8 of the patients screened were likely to be diagnosed with chronic appendicitis in the preoperative period. CA was found in 1 of the 8 patients (12.5%) who underwent surgery after a preliminary diagnosis of CA. Two patients were reported as malignant (25%), 3 patients (37.5%) as reactive lymphoid hyperplasia, and 1 patient as peri appendicitis (12.5%). Bleeding and congestion were reported in the last patient (12.5%).

CONCLUSIONS: The diagnosis of chronic appendicitis is made by pathological examination. It may not always be possible to consider “chronic appendicitis” as a preliminary diagnosis. This should still be kept in mind. In our opinion, it is a bit difficult to make a preliminary diagnosis of chronic appendicitis and make a surgical decision. We believe that controlled and prospective studies can shed more light on chronic appendicitis.

Key Words:

Chronic appendicitis, Recurrent pain attacks, Acute appendicitis.

Introduction

One of the most common emergency operations conducted in surgical clinics is acute appendicitis. The etiology, pathophysiology and treatment of acute appendicitis are well defined. Chronic appendicitis (CA), which is the title of this article, was defined more than a century ago; however, it has not yet been clarified. CA is a rare medical condition¹⁻³.

First of all, the concept of CA should be clarified. Certain medical conditions may seem like CA; however, they are all different clinical pictures. For instance, antibiotic treatment has come to the fore in the treatment of acute appendicitis in recent years, especially in uncomplicated patients. Some of these patients may later develop recurrent attacks⁴. These conditions and similar other conditions, in other words, the concept of recurrent appendicitis, are usually defined as one or more episodes of acute appendicitis lasting 24-48 hours, and they are a separate medical condition on its own. On the other hand, CA may present mainly with a less severe and almost continuous abdominal pain, typically lasting longer than 1-2 days, and often extending to weeks, months, or even years. The exact etiology of CA is unclear. While recurrent appendicitis is thought to be secondary to temporary occlusion of the appendix or excessive production of mucus, CA is assumed to be secondary to partial and permanent obstruction of the appendix lumen^{1,5,6}.

Patients and Methods

The study was conducted upon the approval obtained from the Clinical Research Ethics Committee of City Hospital with Decision No.

784 taken in Meeting No. 54 on 08 April 2020. Our study was conducted in accordance with the principles of the Helsinki Declaration.

Patients who underwent appendectomy in our clinic between August 2018 and March 2020 were retrospectively analyzed. Of the patients whose files and epicrisis were examined before the operation, it was thought that those who met the following criteria might have a prediagnosis of chronic appendicitis:

1. The patients had no medical history of an appendicitis attack, and therefore no history of any medical treatment;
2. there was occasional pain in the right lower quadrant for at least 6 months, lasting for 1-2 days;
3. the decision was made based on radiological images (Figure 1) if there is and anamnesis.

The data of the patients were obtained from the digital records and archives of the pathology laboratory. The patients' demographic details, pathology report findings and the length of their com-

plaints were assessed. Pathologically, increased fibrous tissue with plasma cells, lymphocytes, eosinophils and PNL in the appendix wall is important for chronic appendicitis. After the surgery, patients were called by phone and asked if they had experienced any previous pain attacks.

Statistical Analysis

IBM SPSS for Windows, Version 17.0 (IBM Statistics for Windows Version 17, Chicago, IL, USA) software was used for the statistical tests. Data were expressed as mean + standard deviation (O + SD) or n (%).

Results

It was determined that 207 appendectomies were performed during the retrospective scan period. The data of 182 of these patients could be accessed fully and we could get answers to the criteria we thought. Only 8 of the patients

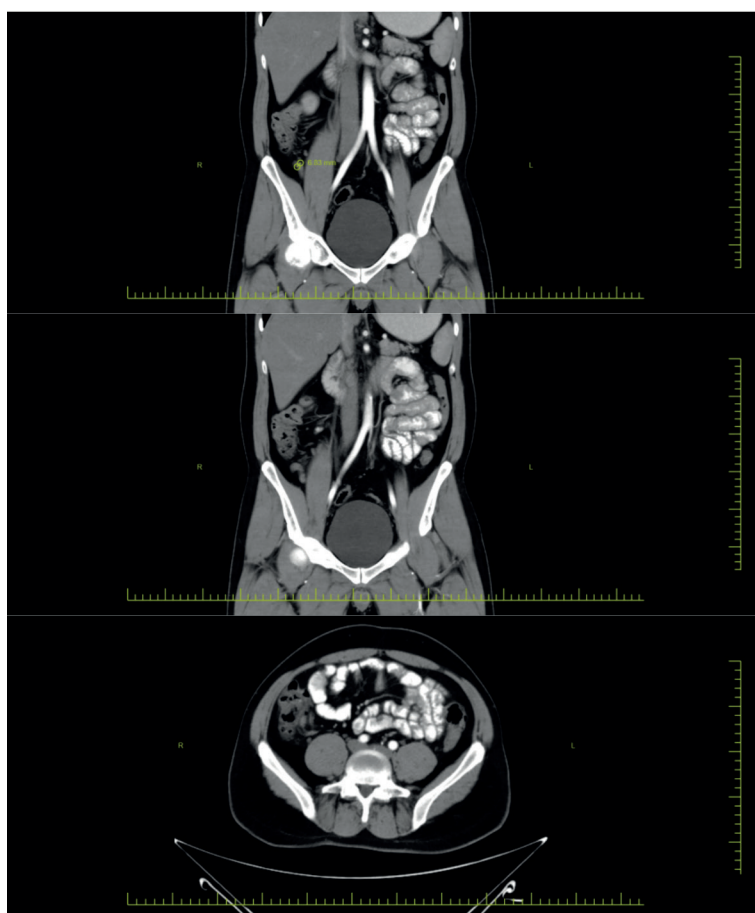


Figure 1. Computed tomography image: there is stranding in pericecal adipose tissue and dilatation (6.83 mm) in the appendix.

screened were likely to be diagnosed with chronic appendicitis in the preoperative period. The data of these 8 patients included in the study are shown in Table I. During this period, the rate of patients who could be considered for CA (n=8) was 3.8% of all patients. 25% of these patients were women. The mean age of the patients was 31.75 ± 8.94 (min-max: 19-44) years.

In the pathological evaluation of patients who may be diagnosed with chronic appendicitis, only 1 (12.5%) of the 8 patients was reported as chronic appendicitis. The pathology result was reported as malignant in 25% (n=2) of the patients. Patients who were reported as malignant according to the pathology results were reported as low-grade mucinous neoplasm. Three patients (37.5%) had symptoms of reactive lymphoid hyperplasia, one patient (12.5%) had symptoms of periappendicitis, and the other patient (12.5%) had symptoms of bleeding and congestion in pathology.

Discussion

The patients with CA represent a small proportion of the patients with diseases of the appendix. As a matter of fact, the presence of such a concept is still controversial. While some authors believe it is a continuation of the acute phase, others believe it is a distinct disease.

In their study, Mattei et al⁷ presented a series of 9 patients with a median age of 30 (15-63 years), who underwent appendectomy for chronic or recurrent appendicitis over an eight-year period. There were 7 female and 2 male patients:

- all patients presenting with pain in the right lower quadrant or lower abdomen for three weeks or longer (mean 16.0 ± 8.4 months, three weeks to seven years);
- no alternative diagnosis to explain symptoms;
- evidence of chronic inflammation or fibrosis in the appendix in the pathological examination;
- and complete improvement in symptoms after appendectomy were reported to be diagnosed with CA, based on these four parameters⁷.

CA does not progress with the clinical manifestation of acute appendicitis and is often diagnosed indirectly by histopathological evaluation. Frequent and persistent pain usually leads to the surgery. A pathologist, rather than a general surgeon, is frequently the one to make this diagnosis⁸. Only one of the patients we presented had pathologically increased fibrous tissue in the wall

of the appendix, along with plasma cells, lymphocytes, eosinophils, and rare PNL (Figure 2).

Stroh et al⁹ reported in their study that the histological diagnosis of CA increased after the increase in diagnostic laparoscopy and laparoscopic appendectomy⁹. In a study conducted by Savrin et al¹⁰ 16% of the 225 patients were diagnosed with CA or subacute appendicitis; however, histopathological confirmation was made in only 4 patients. Besides, concerning recurrent episodes of abdominal pain, 9 patients were diagnosed with acute suppurative appendicitis after the histopathological examination¹⁰. In our study, although 8 patients had a preliminary diagnosis of CA, the disease was pathologically confirmed in only one patient.

Interestingly, in a study performed in the gynecology clinic, it was found that 10% of patients, who underwent appendectomy for right lower quadrant pain, had recurrent CA; and 1% had CA before the surgery. The clinical findings of CA can be confused with many other pathologies. Diseases of the right ovary and tuba in female patients are the major pathologies considered in the differential diagnosis of appendicitis. The diagnosis of appendicitis is very prominent in terms of its clinical features. On the other hand, a definitive diagnosis becomes difficult since all these diseases cause peritonitis. Ultrasonography and tomography, which are expected to be helpful, can be of no use in the presence of chronic inflammation, and they are unable to provide much information to the clinician¹¹.

When Crabbe et al¹² reviewed the records of 205 patients, who underwent appendectomy, they reported that 21 patients (10%) met the diagnostic criteria for recurrent appendicitis, 3 patients (1.5%) were diagnosed with CA based on the clinical history and pathological findings

Table I. Distribution of demographic data and pathology.

Variables	(n=8)
Age	31.75± 8.94
Female (n, %)	2 (25%)
Pathology	
Chronic appendicitis	1 (12.5%)
Malignancy	2 (25%)
Reactive lymphoid hyperplasia	3 (37.5%)
Periappendicitis	1 (12.5%)
Bleeding and congestion	1(12.5%)

Values were expressed as mean ± standard deviation, or numbers (n) and percentages.

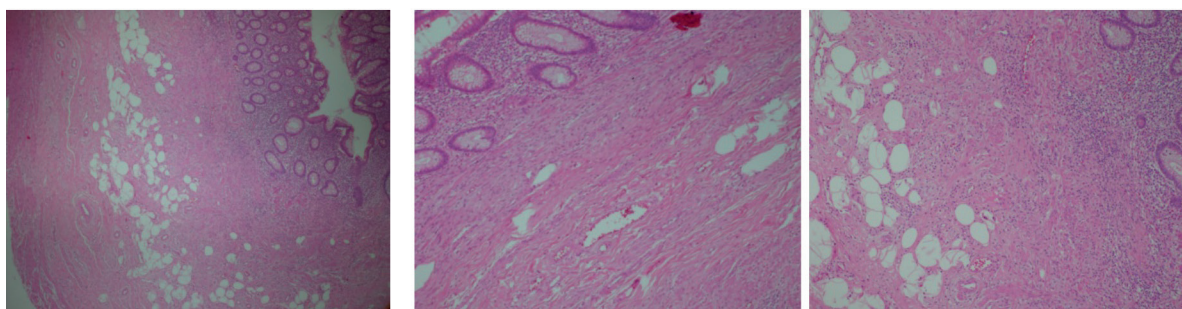


Figure 2. Pathologically increased fibrous tissue in the wall of the appendix, along with plasma cells, lymphocytes, eosinophils, and rare PNL (magnifications 4×10 and 10×10).

of lymphocytic or eosinophilic infiltration of the appendix wall. As a result, they mentioned that the diagnosis of CA should be considered in patients presenting with recurrent pain in the right lower abdominal quadrant¹².

Mussack et al⁸ also examined 322 patients, who had been operated on due to the typical symptoms of appendicitis. All pathology specimens were analyzed macroscopically by a surgeon, and histologically by two independent pathologists. A total of 112 patients exhibited clinical signs of non-acute appendicitis. On the other hand, 26.8% of the pathology specimens histologically revealed an acute inflammation. In the non-acute appendicitis subgroup that was not found to be acute according to the histological findings, 4.9% of the appendices were inconspicuous, 42.0% had chronic inflammation and 50.6% were fibrotic. Nonetheless, the macroscopic examination performed by the surgeon resulted in 93.5% specificity and 77.8% sensitivity. Duration of the pain before the surgery was longer in patients with CA (7 days) compared to patients with acute appendicitis (0.5 days). WBC counts (13,400 vs. 8,700) and preoperative Alvarado scores (7 vs. 4) were lower, and the duration of hospitalization was significantly shorter (3 vs. 4 days). The presence of preoperative 7-day pain was calculated with a specificity of 89.9%, and a positive odds ratio of 4.64. In addition, 93.1% of the patients were asymptomatic, and five patients reported persistent pain in the right lower quadrant, on average 50.2 months after the surgery. CA should be considered in cases of recurrent or prolonged pain lasting more than 7 days, and an elective appendectomy should be performed, according to the researchers⁸.

Imaging methods are frequently used to confirm the diagnosis in cases of suspected appendicitis¹³. The imaging methods that can support the

diagnosis in cases of CA are USG and abdominal CT¹³⁻¹⁶. USG is used as a first-line imaging method since it does not contain radiation, is less sensitive (83%), and yields highly specific results (93%)^{1,3,4}. CT is the preferred imaging method for the appendix, with specificity (89%) and superior sensitivity (96%)¹⁴⁻¹⁶.

Rao et al¹⁷ found that the findings of CA in CT were similar to acute appendicitis. In the cases of CA, the findings of CA in CT include stranding in pericecal fat tissue (100%), appendix dilatation (88.9%), focal thickening (66.7%), enlargement of abdominal lymph nodes (66.7%), and calcified appendicolith (50%)^{14,15}, abscess and phlegmon¹⁵. Computed tomography images of our patient are shown in the Figure 1. There is stranding in pericecal adipose tissue and dilatation (6.83 mm) in the appendix.

Conclusions

The diagnosis of chronic appendicitis is made by pathological examination. In other words, the diagnosis is made by the pathologists rather than the clinicians. In this study, we separated the patients who could be diagnosed with chronic appendicitis according to the criteria defined in the literature (by retrospectively evaluating preoperative complaints and imaging methods).

It may not always be possible to consider chronic appendicitis as a preliminary diagnosis. This should still be kept in mind. In our opinion, it is a bit difficult to make a preliminary diagnosis of chronic appendicitis and make a surgical decision. However, in such a case, it should be shared with the patient that their pain may not completely go away. Before the operation, the patient should be informed that these pains can persist, albeit infrequently. The decision on surgery should be taken together with the patient. The decisions

about the patient should not be taken precipitately. Anamnesis should be detailed, and recurrent pain attacks should be inquired. The duration and the pattern of the pain should be inquired. Attention should be paid to the signs characterized by more long-lasting and less severe pain, rather than inflammatory pain. Other diseases that may cause chronic abdominal pain should be considered individually, and they should be considered in the differential diagnosis. The patients should be carefully examined considering the findings. The preliminary diagnosis of CA can only be made with a meticulous examination. This can be achieved by establishing proper communication with the patient. We are in favor of performing the surgery laparoscopically. In this way, other events that may cause chronic pain will be explored. We believe that controlled and prospective studies can shed more light on chronic appendicitis.

Conflicts of interest

The authors declare that they have no conflict of interest.

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