

Management Strategies of Appendix with Mild Inflammation

Hafif inflamasyonlu apendisitte tedavi yaklaşımları

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Özet

Amaç: Akut apandisit tedavisi halen klinik bir tartışmadır. Bu çalışmada, erken akut apandisit tanısı alan hastalarda değişik tedavi yaklaşımlarını ve bunların takiplerini tartışmayı amaçladık.

Yöntem: Ağustos 2008 ve Ocak 2010 tarihleri arasında erken dönem akut apandisit tanısı konulan 45 hasta çalışmaya dahil edildi ve bu hastaların 1 yıllık takip sonuçları incelendi. Bu hastalar 3 gruba randomize edildi. Birinci gruba apendektomi yapıldı, ikinci gruba antibiyotik tedavisi uygulandı ve üçüncü grup ise sadece izlendi.

Bulgular: 45 hastanın ortalama yaşı 25 (18-52) idi. 34 hasta kadın (%75.6) ve 11 hasta (%24.4) erkek idi. Ortalama beyaz küre sayısı 7952±1698 /uL (4800-10700) olarak izlendi. Ultrasonografide ortalama apendiks duvar kalınlığı 5.46±0.35 (5,0-6,0) mm olarak tespit edildi. Gruplar arasında yaş, cinsiyet, beyaz küre sayısı ve ultrasonografi sonuçları açısından farklılık yoktu (p=0.361, 0.894, 0.708 ve 0.867). Cerrahi yapılan grubun hepsinde patoloji sonuçları akut apandisit olarak geldi. Antibiyotik tedavi grubundan 2 hasta daha sonra tekrarlayan karın ağrısı şikayeti ile, biri 2 hafta sonra, diğeri ise 2 gün sonra tekrar hastaneye başvurdu ve bu hastalara apendektomi yapıldı, ancak patoloji raporlarında kronik apandisit bulgusu saptanmadı.

Sonuç: Apendektomi erken akut apandisit düşünülen hastaların çoğunda gerekli değildir.

Anahtar Kelimeler: Akut apandisit, hafif inflamasyon, antibiyotikler, takip, konservatif tedavi.

Abstract

Objective: In this study, we examined the cases with mild acute appendicitis and their treatments with different modalities and their follow up.

Method: 45 patients were studied between August 2008 and January 2010, with further follow-up for 1 year. The patients were randomly allocated into three groups by systematic random sampling with an equal size of 15 to maintain balance. First group was appendectomy group, second was antibiotic group and third group was follow up (no treatment) group.

Results: The median age of the patients was 25 (18-52) years. 34 (75.6%) were women and 11 (24.4%) were men. The mean white blood cell count was 7952±1698 /uL (4800-10700). The mean appendix wall thickness at ultrasonography was 5.46±0.35 (5,0-6,0) mm. There were no statistical difference detected between groups in age of patients, sex, white blood cell count and ultrasonography results (p=0.361, 0.894, 0.708 and 0.867). Of the patients who underwent surgery had proven appendicitis at histological examination. Two patients treated with antibiotics were readmitted with recurrent appendicitis, one patients after 2 weeks of treatment and one patient after 2 days of treatment and were subsequently operated in the second admission. However, no chronic findings were noted at histopathological examination.

Conclusion: Most of the early acute appendicitis, there is no need for appendectomy.

Keywords: Acute appendicitis, mild inflammation, antibiotics, follow up, conservative management.

Introduction

Acute appendicitis (AA) can still become a challenging clinical problem. A brief review of the pathophysiological mechanisms in AA will help the physician to understand why and when surgery may be indicated and when conservative treatment could be a reasonable alternative (1,2). The basic pathophysiological mechanism involved in AA is the development of compromised blood supply due to obstruction of its lumen and becoming very vulnerable to invasion by bacteria found in the gut normally. Obstruction of the appendix lumen by fecolith, enlarged lymph node, worms, tumor, or indeed foreign objects, brings about a raised intraluminal pressure, which causes the wall of the

appendix to become distended (3). In 60% of patients, obstruction is caused by hyperplasia of submucosal lymphoid follicles. This form of obstruction is observed most commonly in children and is known as catarrhal appendicitis. Once the edema and congestion increases, there is interference with the blood supply resulting in gangrene of the appendix. Perforation and peritonitis (either localized or generalized) may ensue. According to the investigators, one form of appendicitis results in perforation quickly and inevitably, whereas the other milder form does not perforate and may resolve spontaneously (1,2).

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Geliş tarihi / Received: 02.07.2013 Kabul tarihi / Accepted: 05.08.2013

Çıkar Çatışması / Conflict of Interest: Yok / None



In this study, we examined the cases with mild acute appendicitis and their treatments with different modalities and their follow up.

Methods

Fortyfive patients were studied between August 2008 and January 2010, with further follow-up for 1 year. The patients were randomly allocated into three groups by systematic random sampling with an equal size of 15 to maintain balance. All patients signed informed consents before randomisation and local ethic committee approved the study.

First group was appendectomy group, second was antibiotic group and third group was follow up (no treatment) group. The time of onset of abdominal pain was ascertained, and patients were examined by the same surgeon before inclusion in the study. Inclusion criteria included typical history of acute appendicitis and clinical signs of minimal, poorly localized, non-reproducible tenderness, without rebound or guarding. There was no leucocytosis, with normal urinalysis and abdominal ultrasonography revealed an inflamed tubular structure, non compressible, non peristalting, blind ended with a 5-6 mm in diameter. There was no signs of generalized peritonitis and no fever.

All patients underwent an abdominal ultrasonography by the same radiologist. In antibiotic group and follow up group, ultrasonography repeated daily until all the pathological images were resolved. Computed tomography was not used for diagnosis. There was no pain killer used in the treatment protocol (either anti-inflammatory drug or paracetamol). Amoxicillin-clavunate 1 gr, 2 times a day orally used as an antibiotic choice.

In surgery group, immediate appendectomy was performed and patients stayed for 1 day at the hospital and all discharged at the following day of surgery with no prophylactic antibiotic, with only pain killer. In antibiotic group, no patients hospitalized. All ate and drank and advised not to take any pain killer. All came to control daily to perform ultrasonography and clinical examination. In follow up group, nothing advised to patients, only came to hospital

daily for ultrasonography and clinical examination. Statistical comparisons between groups were made using one way ANOVA test. Descriptive statistics was employed to characterize the data; $p < 0.05$ was considered significant.

Results

Fortyfive patients were enrolled in the study, 15 in surgery group, 15 in antibiotherapy group and 15 in follow up (no treatment) group. The median age of the patients was 25 (18-52) years. Thirtyfour (75.6%) were women and 11 (24.4%) were men. All patients admitted to our emergency department with abdominal pain, at physical examination, poorly localized, non-reproducible tenderness, without rebound or guarding. All patients were consulted with the same general surgeon. All patients' urinalysis were normal. The mean white blood cell count was 7952 ± 1698 /uL (4800-10700). The mean appendix wall thickness at ultrasonography was 5.46 ± 0.35 (5,0-6,0) mm. There were no statistical difference detected between groups in age of patients, sex, white blood cell count and ultrasonography results ($p = 0.361$, 0.894, 0.708 and 0.867 respectively).

When ultrasonography reports examined in detailed, 2 patients in follow up group, 3 patients in antibiotherapy group and 1 patients in surgery group had fecolith in appendix lumen, 2 patients in follow up group, 2 patients in antibiotherapy group and 3 patients in surgery group had minimal fluid in the abdomen and 3 patients in follow up group and 1 patient in antibiotherapy group had mesenteric lymphadenopathy, there was also no statistically significant difference between groups in ultrasonography reports ($p = 0.879$).

Of the patients who underwent surgery had proven appendicitis at histological examination. Two patients treated with antibiotics were readmitted with appendicitis, one patient after 2 weeks of treatment and one patient after 2 days of treatment and were subsequently operated in the second admission. However, no chronic findings were noted at histopathological examination.



Discussion

Appendicitis is an acute condition of the abdomen that is treated with surgical intervention. First appendectomy was performed more than 120 years ago by A. Grooves. In 1886, Fitz published the first study on AA, and proposed early appendectomy for the management of AA (4). Three years later, in 1889, McBurney reported his study of eight patients with AA, with special reference to early appendectomy (5). Since that time, early appendectomy has been established as a 'surgical dogma' widely accepted in the surgical community for the management of AA for more than 1 century (4-6). The first report was presented in 1945, whereas in 1959, Coldrey reported 471 unselected patients who underwent treatment with antibiotics alone with low mortality and morbidity rates (7,8). Of 500 patients with suspected acute appendicitis, 425 were treated conservatively, with use of traditional Chinese medicines and antibiotics in some (9). Seven of 100 patients at follow-up had recurrent appendicitis. In both studies, patients were assessed by history and clinical examination; the treatment differed without standardization, and there was no consecutive follow-up.

Conservative treatment of appendicitis currently involves intravenous antibiotics. While conservative care is a useful tool in apprehensive patients, in conditions such as perforated appendicitis, delays in proper treatment can be life threatening. Despite that conservative management of AA cannot be used for all patients with AA (for example, in the presence of peritonitis), it could be preferred in a large percentage of patients with mild infection (as evidenced by clinical, laboratory, and imaging findings). This approach has many advantages, including high success and low recurrence rates, reduced morbidity and mortality, less pain, shorter hospitalization and sick leave, and reduced costs. The success rate for conservative treatment of appendicitis in the studies was 88–95% (average 90.8%) with a recurrence risk of 5–37% (average 15.9%) (10-13). The only military study achieved a success rate of 55.6% in the conservative treatment arm; however, this latter study was based on only 9 patients (14). In 1959, Coldrey showed that the conser-

vative treatment of acute appendicitis can be successful in 91.8% of cases (8). In this study conservative management failed in only two out of 30 patients (6.7%). The success rate was 93.3%.

Perforated appendicitis and nonperforated appendicitis were different clinical entities. Butsch et al, showed that uncomplicated appendicitis does not progress to complicated appendicitis over time (15). This also supports Luckmann et al, they revealed that perforated and nonperforated appendicitis are different clinical conditions, as do earlier observations of a higher rate of obstruction and appendicoliths in gangrenous and perforated appendicitis than in phlegmenous appendicitis, however in this study there was no relation between conversion of therapy group to surgery and fecolith in the lumen of appendix (16). In two cases that treatment failed had no fecolith in appendix lumen at ultrasonography.

There are several studies in literature, including patients who had evidence of appendicitis on ultrasonography or computed tomography scan, who had spontaneous resolution without surgery or antibiotics (17-21). In some studies resolution of appendicitis correlated with ongoing radiologic examination (18,20,21). In this study, after conservative treatment, patients were followed up until normal findings were found at ultrasonography.

Appendectomy may not be necessary for many patients with acute appendicitis, the basic pathophysiology of appendicitis is obstruction of the lumen of the appendix followed by infection. In 60% of patients, obstruction is caused by hyperplasia of submucosal follicles. In acute inflammatory appendicitis with mild inflammation and secondary bacterial invasion to appendiceal wall, source control with antibiotics and resolution of inflammation by follow up can be obtained. The role of antibiotic and follow up might be to control inflammation in this organ while mucosal repair and healing take place, without the need for appendectomy (22). Surgery for these cases resulted in over treatment and also the negative appendectomy carries significant morbidity from wound sepsis, intestinal obstruction, pneumonia, and infertility from fimbrial damage (23,24).



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