

Effect of the Presence of Morbidity on Complication Development in Geriatric Patients with Acute Appendicitis

Tolga Canbak¹, Aylin Acar¹, Buket Altun Ozdemir¹, Metin Yucel¹, Fatih Basak¹, Esra İlk¹, Sema Yuksekdağ¹, Ethem Unal¹, Gurhan Bas²

ABSTRACT:

Effect of the presence of morbidity on complication development in geriatric patients with acute appendicitis

Objective: In this study, we aimed to evaluate the patients aged 65 years and older who underwent surgery for acute appendicitis.

Material and Methods: The data of the 33 patients aged 65 years and older who underwent appendectomy for acute appendicitis between January 2011 and December 2014 were retrospectively analyzed. The demographic data, duration of complaint, comorbid diseases, operative findings, the period between the onset of abdominal pain and the admission to the hospital, duration of hospital stay, complications and mortality rates were evaluated. Patients were divided into 2 groups according to their comorbidity status.

Results: There were 21 female and 12 male patients. The mean age of the patients was 73.9 years (range: 65-89 years). Of the patients, 10 patients had diabetes mellitus, 16 had hypertension, 3 patients had heart / valve disease, 3 had COPD and 2 had cerebrovascular disease. Appendectomy was performed with laparoscopy in 7 patients, with Mc Burney's incision in 14 patients and 11 patients were operated with median incision; in 1 patient, the operation was initiated with laparoscopy then proceeded with Mc Burney's incision. Ultrasound examination revealed acute appendicitis in 22 patients. Computed tomography was performed in 19 patients. The mean period of hospital stay was 5.66 days (range: 1-33 days). Eight of the patients were followed up in postoperative intensive care unit (ICU). Six patients developed wound infection and 2 patients developed intra-abdominal abscess. All complications were seen in group 1. There was a statistically significant difference between the groups ($p<0.05$). Mortality occurred in 1 patient.

Conclusion: Because of the high rate of complication in the presence of morbidity, the importance of preoperative evaluation, optimum preoperative care and completion of prophylaxis and incision selection according to the patient can reduce the rate of complication.

Keywords: Appendicitis, complications, geriatric, morbidity

ÖZET:

Akut apandisitli geriatric hastalarda morbidite varlığının komplikasyon gelişimine etkisi

Amaç: Bu çalışmada, 65 yaş ve üzeri akut apandisit nedeniyle ameliyat edilen hastaların değerlendirilmesi amaçlandı.

Gereç ve Yöntemler: Ocak 2011-Aralık 2014 tarihleri arasında 65 yaş ve üzeri akut apandisit nedeniyle ameliyat edilen 33 hasta retrospektif olarak değerlendirildi. Hastaların demografik verileri, şikayet süreleri, komorbid hastalıkları, operasyon bulguları, karın ağrısı başlangıcı ile hastaneye başvuru arasındaki süre, yatış süreleri, komplikasyonlar ve mortalite gelişimi değerlendirildi. Komorbidite durumuna göre hastalar, 2 gruba ayrıldı.

Bulgular: Hastaların 21'i kadın ve 12'si erkek idi. Ortalama yaşı 73.9 (aralık 65-89) idi. Hastaların 10'unda Diabetes mellitus, 16'sında hipertansiyon, 3 hastada kalp/ kapak hastalığı, 3 hastada KOAH ve 2 hastada serebrovasküler hastalık mevcuttu. Apendektomi, 7 hastada laparoskopik, 14 hastada Mc Burney, 11 hastada median insizyonla yapıldı ve 1 hastada laparoskopik başlanıp Mc Burney insizyonla ameliyat edildi. Ultrasonografik incelemede, 22 hastada akut apandisit saptandı. Bilgisayarlı tomografi, 19 hastaya çekildi. Ortalama hastanede yatış süresi 5.66 (1-33) gündü. Hastaların 8'i postoperatif yoğunbakım ünitesinde takip edildi. Altı hastada yara yeri enfeksiyonu ve 2 hastada batin içi apse gelişti. Tüm komplikasyonlar grup 1'de görüldü. Gruplar arasında istatistiksel olarak anlamlı farklılık saptandı ($p<0.05$). Mortalite 1 hastada görüldü.

Sonuç: Morbidite varlığında komplikasyon oranı yüksek olduğundan preoperatif değerlendirmeye önem verilmesi, hastanın optimum preop bakımının profilaksinin, tamamlanması, insizyon seçiminin hastaya göre yapılması komplikasyon oranını azaltabilir.

Anahtar kelimeler: Apandisit, komplikasyon, geriatric, morbidite

Ş.E.E.A.H. Tıp Bülteni 2017;51(2):115-8



¹Health Sciences University, Umraniye Training and Research Hospital, Department of General Surgery, Istanbul - Turkey

²Medeniyet University, Goztepe Training and Research Hospital, Department of General Surgery, Istanbul - Turkey

Address reprint requests to / Yazışma Adresi: Aylin Acar, Health Sciences University, Umraniye Training and Research Hospital, Department of General Surgery, Istanbul - Turkey

Phone / Telefon: +90-216-632-1818

E-mail / E-posta: aylinacar79@hotmail.com

Date of receipt / Geliş tarihi: November 15, 2016 / 15 Kasım 2016

Date of acceptance / Kabul tarihi: March 28, 2017 / 28 Mart 2017

INTRODUCTION

Acute appendicitis is the most common emergency abdominal surgery and its life-long incidence is 7%. It occurs most frequently in the 2nd and 3rd decades, with 5-10% of the cases constituting the elderly population (1). The prolongation of the life span is predicted to increase its incidence in the elderly and the number of surgical treatments in the elderly is increasing in proportion to the developments in the surgical technique and postoperative care.

Compared with the younger age group, elderly patients are more likely to suffer from present disease and reduced body resistance, and therefore higher morbidity and mortality rates are reported. In addition, the lack of typical history and clinical findings may lead to delayed treatment and consequently acute appendicitis is more difficult to diagnose and treat (2,3). Although not common in the elderly population, the risk of complications is increased due to comorbidities in these patients (4). In recent studies, laparoscopic appendectomy is much more preferred in elderly patients with acute appendicitis (5,6). In this study, it was aimed to evaluate the patients aged 65 years and older who underwent surgery for acute appendicitis.

MATERIAL AND METHOD

The data of the 33 patients aged 65 years and older who underwent appendectomy for acute appendicitis between January 2011 and December 2014 were retrospectively analyzed. All patients had preoperative prophylactic 2 g. intravenous first-generation cephalosporin. The patients with appendiceal malignancy in histopathological examination were excluded from the study. The demographic data, duration of complaint, comorbid diseases, the period until the operation, operative findings, the duration of hospital stay, complications and mortality rates were evaluated. The effect of comorbid diseases on duration of stay and complication development were compared. Two groups were formed according to whether there was comorbidity or not.

For statistical analysis, SPSS (Statistical Package for Social Sciences) 21.0 program was used. Descriptive statistical methods (mean, standard deviation, frequency, ratio, median) were used when study data were evaluated and Mann-Whitney and chi-square tests were used to compare data. Significance was assessed at $p < 0.05$ level.

RESULTS

A total of 1256 patients underwent appendectomy between January 2011 and December 2014. Of these patients, 34 were 65 years old or older. One of the patients over 65 years old was excluded from the study due to malignancy. Of the 33 patients who were included in the study, 21 were female (63.6%) and 12 were male (36.4%). The mean age was 73.9 (range 65-89) years. The mean age of the women was 73.80 years and the mean age of the men was 74.08 years. When comorbid diseases were evaluated, 10 patients had diabetes mellitus, 16 had hypertension, 3 had heart / valve disease, 3 had COPD and 2 had cerebrovascular disease. Comorbid disease was present in 22 patients, including 1 comorbid disease in 13 patients, 2 comorbid diseases in 7 patients and 3 comorbid diseases in 2 patients. Eleven (33%) of the patients had no comorbid disease.

The average admission time to the hospital was 2.36 days (range 1-14) of the patients after the complaints have started. After admission to the hospital, the mean duration of operation decision was 1.15 days (range 0-2). The mean duration of admission to the hospital was 2.8 days in Group 1 and 1.45 days in Group 2. The mean duration of operation decision after admission to the hospital was 1.13 days in Group 1 and 1.18 days in Group 2.

Fourteen patients with Mc Burney's incision and 11 patients with median incision, underwent open appendectomy, and 7 patients underwent laparoscopic appendectomy. In one patient, laparoscopic surgery was started, then followed by open method with Mc Burney's incision. In Group 1, 6 patients were operated with Mc Burney's incision, 5 patients were laparoscopically operated and 11 patients with median incision. In Group 2, 8 patients

Table-1. Comparison of data according to morbidity - mortality development

	Morbidity (+)	Morbidity (-)	P*
Mean age	71.95	77.81	
Gender			
Male	6	6	0.149
Female	16	5	
Complication	8	0	0.031**
Histopathological examination			
Phlegmonous appendicitis	14	10	0.212
Perforated appendicitis	8	1	

*Chi-square test, **p<0.05

were operated with Mc Burney's, 2 patients were operated laparoscopically and 1 patient was switched to open surgery from laparoscopy.

Ultrasonographic examination revealed acute appendicitis or free fluid in 22 patients. In 19 patients, computed tomography (CT) was performed. The mean period of hospital stay was 5.66 (1-33) days. Eight of the patients were followed up in postoperative ICU. In six patients superficial wound infection and in two patients intra-abdominal abscess developed. Percutaneous drainage was performed in 2 patients who developed intra-abdominal abscess and they were treated conservatively. Mortality was seen in 1 patient. No complication developed in Group 2. All complications were seen in Group 1. There was a statistically significant difference between the groups (p<0.05).

Histopathological examination revealed perforated appendicitis in 9 cases and gangrenous, phlegmonous appendicitis in 24 cases. Perforated appendicitis was detected in 8 patients (36.4%) in Group 1 and 1 patient (9%) in Group 2. There was no statistically significant difference between the groups (p>0.05).

CONCLUSION

The elderly population is growing rapidly, but there are no demographic surveys about the elderly population at the same rate. These group of patients require more attention and care (7). According to Turkish Statistical Institute (TSI) data in Turkey, while the elderly population over 65 years of age was 11.8% in 2006, it is expected to be 15.4% in 2020 (8). With this increase, rates of admission to ER and

rate of acute appendicitis will increase. In many studies, elderly patients have been shown to refer to the hospital later, which in turn significantly increases the development of complications (9,10). In our study, patients' mean admission time to the hospital was 2.36 days.

Clinically diagnosing appendicitis in geriatric patients is more difficult than in young people. Pain sensation alters due to age-related changes in nerve conduction. For this reason, clinical findings are atypical and mild. It has been shown in the literature that typical appendicitis clinic table has been detected in approximately 10-20% of these patients (9-11). In geriatric patients, the incidence of definitive diagnosis of acute appendicitis is relatively low (12). For this reason, explorative laparotomy with median incision is often used in geriatric patients. Diagnostic laparoscopy is also frequently used. In this study, open surgery was performed in 14 patients with Mc Burney's incision and in 11 patients with median incision, and in 7 patients, laparoscopic appendectomy was performed. In one patient, laparoscopic surgery was started, then followed by open method with Mc Burney's incision. In this study, it is seen that median incision and laparoscopy rates are high. However, this study cannot tell which one should be the right method.

Percentage of acute appendicitis in the elderly has been reported as 43-72% (9,13). The high rate of perforated appendicitis in geriatric patients also increases the morbidity and mortality rates (14). In this study, perforated appendicitis was detected in 9 patients (27%) with histopathological examination. High rates of perforated appendicitis was found, consistent with the literature. However, there was no

statistically significant relationship between the presence of perforated appendicitis and the presence of additional morbid disease in the patient ($p>0.05$).

The incidence of morbid diseases increases with age. Wound healing is delayed due to morbid diseases. Complication rates are higher in these patients due to additional morbid diseases and late

admission to the hospital. In this study, there was a statistically significant difference in complication rate among patients with morbid disease ($p<0.05$).

The limitations of this study were, it was retrospective, conducted with low number of patients, and the distribution among the groups was not homogeneous.

REFERENCES

1. Yeh EL, McNamara RM. Abdominal pain. *Clin Geriatr Med* 2007; 23: 255-70. [CrossRef]
2. Agaba EA, Goon P, Pushdary K, Wong LS. Perforated appendicitis in the elderly masquerading as acute coronary syndrome. *Surg Infect (Larchmt)* 2004; 5: 195-9. [CrossRef]
3. Bor-Fuh Sheu, Te-Fa Chiu, Jih-Chang Chen, Meng-Sheng Tung, Meng-Wei Chang, Yui-Rwei Young. Risk factors associated with perforated appendicitis in elderly patients presenting with signs and symptoms of acute appendicitis. *ANZ Journal of Surgery* 2007; 77: 662-6. [CrossRef]
4. Ibis C, Albayrak D, Hatipoglu AR, Turan N. The amount of comorbidities as a single parameter has no effect in predicting the outcome in appendicitis patients older than 60 years. *South Med J* 2010; 103: 202-6. [CrossRef]
5. Kot A, Kenig J, Wałęga P. Treatment of Acute Appendicitis in Geriatric Patients - Literature Review. *Pol Przegl Chir* 2016; 88: 136-41. [CrossRef]
6. Hiramatsu K, Toda S, Tate T, Fukui Y, Tomizawa K, Hanaoka Y, et al. Can laparoscopic appendectomy be safely performed by surgical residents without prior experience of open appendectomy?. *Asian J Surg* 2017; 9584: 317-27. [CrossRef]
7. Ilgili O, Arda B, Munir K. Ethics in geriatric medicine research. *Turk Geriatri Derg* 2014; 17: 188-195.
8. Demografik Veriler. www.tuik.gov.tr.
9. Storm-Dickerson TL, Horattas MC. What have we learned over the past 20 years about appendicitis in the elderly? *Am J Surg* 2003; 185: 198-201. [CrossRef]
10. Harrell AG, Lincourt AE, Novitsky YW, Rosen MJ, Kuwada TS, Kercher KW, et al. Advantages of laparoscopic appendectomy in the elderly. *Am Surgeon* 2006; 72: 474-80.
11. Rub R, Margel D, Soffer D, Kluger Y. Appendicitis in the elderly: what has changed? *Isr Med Assoc J* 2000; 2: 220-3.
12. Lee JFY, Leow CK, Lau WY. Appendicitis In The Elderly. *ANZ Journal of Surgery* 2000; 70: 593-6. [CrossRef]
13. Konan A, Hayran M, Kılıç YA, Karakoç D, Kaynaroglu V. Scoring systems in the diagnosis of acute appendicitis in the elderly. *Ulus Travma Acil Cerrahi Derg* 2011; 17: 396-400. [CrossRef]
14. Lunca S, Bouras G, Romedea NS. Acute appendicitis in the elderly patient: diagnostic problems, prognostic factors and outcomes. *Rom J Gastroenterol* 2004; 13: 299-303.