

EVALUATION OF GERIATRIC PATIENTS THAT ADMITTED TO THE EMERGENCY DEPARTMENT WITH ACUTE ABDOMINAL PAIN

ACİL SERVİSE AKUT KARIN AĞRISI İLE BAŞVURAN GERİATRİK HASTALARIN DEĞERLENDİRİLMESİ

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Öz

Amaç

Bu çalışmanın amacı acil servise (AS) nontravmatik akut karın ağrısı ile başvuran 65 yaş ve üzeri geriatrik hastaların demografik bulgularını, klinik özelliklerini, radyolojik inceleme yöntemlerini ve mortalite oranlarını değerlendirmektir.

Gereç ve Yöntem

Çalışmaya dahil edilen 2253 hasta yaş aralıklarına göre; 65-74 ve 75 yaş ve üzeri olarak ayrıldı. Cinsiyet, komorbidite, eşlik eden şikayetler, muayene bulguları (hassasiyet, defans, rebound), radyolojik inceleme yöntemleri (radyografi, ultrasonografi ve bilgisayarlı tomografi), tanıları, tedaviler (tıbbi, cerrahi), taburculuk ve mortalite oranları karşılaştırıldı.

Bulgular

Hastaların %62,3'ü kadın olup, yaş ortalaması 72,2±5,1 yıl (65-88) idi. Hastaların %59,4'ü 65-74 yaş aralığında iken, %40,6'sı 75 yaş ve üzerinde idi. Hipertansiyon, diabetes mellitus, demans/Alzheimer hastalığı, atriyal fibrilasyon 65-74 yaş aralığındaki hastalarda anlamlı olarak daha yüksekti ($p<0,001$). Eşlik eden yakınmalardan biri olan ishal, 65-74 yaş

aralığındaki hastalarda anlamlı olarak daha yüksek idi ($p<0,001$). Hassasiyet, defans ve rebound, 65-74 yaş aralığındaki hastalarda anlamlı olarak daha yüksekti ($p<0,001$). Radyolojik inceleme yöntemleri açısından yaş aralıkları arasında fark yok idi (sırasıyla; $p=0,434$; $p=0,321$; $p=0,634$). 65-74 yaş aralığındaki hastalarda akut gastroenterit, nonspesifik karın ağrısı, abdominal aort anevrizması, 75 yaş ve üzerinde safra kesesi ve yollarına ait hastalıklar, konstipasyon, gastrointestinal sistem kanaması, peptik ülser, divertikülit ve komplikasyonları, mide perforasyonu, abdominal aorta diseksiyonu ve akut mezenterik iskemi tanılarını anlamlı yüksek idi ($p<0,05$). Tedavi açısından yaş aralıkları arasında anlamlı fark saptanmadı (sırasıyla; $p=0,478$; $P=0,182$). 75 yaş ve üzerinde ölen hasta sayısı anlamlı olarak daha yüksek idi ($p<0,001$).

Sonuç

Mevcut çalışma, AS'e akut karın ağrısı ile başvuran geriatrik hastalarda muayene bulguları, mortaliteyi etkileyen hastalıklar ve mortalite oranlarında yaşa bağlı anlamlı farklılıklar bulmuştur.

Anahtar Kelimeler: Acil servis, Geriatrik hasta, Karın ağrısı

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Abstract

Objective

The goal of the study is to investigate demographic findings, clinical characteristics, radiological examination methods, and mortality rate of geriatric patients (aged 65 and above) with non-traumatic acute abdominal pain, that were admitted to the emergency department (ED).

Materials and Methods

2253 patients included in the study were divided by age as patients aged 65 to 74 years and patients aged 75 years and above. Gender, comorbidity, concomitant complaints examination findings (tenderness defense, rebound), radiological examination methods (radiography, ultrasonography, and computed tomography), diagnoses, treatments (medical, surgical), discharge, and mortality rate were compared between these patients.

Results

Of the patients, 62.3% were female, and the mean age was 72.2±5.1 years (65-88). While 59.4% of the patients were in the 65–74 age group, 40.6% of them were aged 75 years and above. Hypertension, diabetes mellitus, dementia/Alzheimer's disease, atrial fibrillation were significantly higher in the aged 65 to 74 years patients ($p<0.001$). Diarrhea, one

of the concomitant complaints, was significantly higher in the aged 65 to 74 years patients ($p<0.001$). Tenderness, defense, and rebound were significantly higher in the aged 65 to 74 years patients ($p<0.001$). There was no difference between the age ranges in terms of radiological examination methods ($p=0.434$; $p=0.321$; $p=0.634$, respectively). Acute gastroenteritis, nonspecific abdominal pain, abdominal aortic aneurysm were higher in the aged 65 to 74 years patients, while biliary and biliary tract diseases, constipation, gastrointestinal tract bleeding, peptic ulcer, diverticulitis and complications, stomach perforation, abdominal aortic dissection, and acute mesenteric ischemia were higher in the aged 75 years and above ($p<0.05$). There was no difference between the age groups in terms of treatment ($p=0.478$; $p=0.182$, respectively). The number of patients who died aged 75 years and above was significantly higher ($p<0.001$).

Conclusion

The current study found significant age-related differences in examination findings, diseases affecting mortality, and mortality rate in geriatric patients admitted to ED with acute abdominal pain.

Keywords: Abdominal pain, Emergency department, Geriatric patient

Introduction

Acute abdominal pain is a nontraumatic complaint lasting for a maximum of five days and is observed in a wide spectrum of diseases, ranging from benign to life-threatening (1,2).

Due to the changing global demographics, the rate of elderly in the population is gradually increasing. Consequently, more and more elderly patients are admitted to the emergency department (ED) every year (3). Approximately 10% of the patients admitted to ED suffer from abdominal pain, and approximately 20% of them are geriatric patients (4).

The evaluation and management of these patients in the ED are complicated and time-consuming due to a variety of reasons such as age-related health complications, increases in comorbidities, decreased functional status, using multiple prescriptions, and impotent immune system. In addition, atypical

symptoms are more frequently observed in these patients and, physical examination findings are not strongly related to the severity of their diseases (5). Furthermore, length of stay in the ED and hospitalization period are higher, surgical interventions are more frequently required, and mortality rates are higher (6,7).

This study aims to evaluate the demographic findings, clinical characteristics, radiological examination methods, and mortality rate of geriatric patients who applied to ED with acute abdominal pain.

Material and Methods

Study Design and Setting

This retrospective study was conducted between July 1, 2015, and January 1, 2020, in the ED of a tertiary hospital in the capital city. University of Health Sciences Dışkapı Yıldırım Beyazıt Training and Research Hospital, Clinical Research Ethics

Committee approved the study (number: 106/30, date: 08/3/2021). Data were obtained from the patient's hospital medical records.

During the study period, 1.071.685 patients were admitted to ED, of which 139.319 (13%) consisted of geriatric patients. Of the patients aged 65 and above, 8359 (6%) were applied with abdominal pain.

Study Population

The exclusion criteria were as follows: (1) traumatic abdominal pain; (2) missing hospital records; (3) abdominal pain due to extra-abdominal reasons; (4) refused treatment; (5) patients who died of causes other than the pathology that caused abdominal pain.

The total number of patients included in the study was 2253. The patients included in the study were classified into groups by age as patients aged 65-74 years (group 1) and patients aged 75 years and above (group 2). The patients included in the study were classified by age as 65-74 years (group 1) and those aged 75 years and above (group 2).

Gender, comorbidities, concomitant complaints, examination findings (tenderness defense, rebound), radiological examination methods (radiography, ultrasonography, computed tomography [CT]), diagnoses, treatments (medical, surgical), discharge, and mortality rate were compared between the groups.

Statistical Analysis

Statistical analysis was performed using the Statistical Package for the Social Sciences 22.0 (SPSS Inc., Chicago, IL). In the study, mean standard deviation (\pm) was given for numerical data as descriptive statistics, while number (n) and percentage (%) were given for categorical data. In addition, Pearson's Chi-Square test was used to compare categorical data. A $p < 0.05$ was considered statistically significant.

Results

The gender distribution of the study was 1403 (62.3%) female and 850 (38.7%) male and, the mean average age was 72.2 ± 5.1 years (65-88). The number of patients in group 1 and 2 was 1338 (59.4%) and 915 (40.6%), respectively. Of the patients in group 1, 791 (59.1%) and in group 2, 612 (66.9%) were female. The mean age of the patients in group 1 and 2 was 68.6 ± 2.8 and 77.6 ± 2.3 years, respectively.

At least one comorbidity was present in 1411 (62.6%) patients. The most common comorbidities

were hypertension (HT) 548 (24.3%), chronic obstructive pulmonary disease (COPD) 457 (20.3%), diabetes mellitus (DM) 399 (17.7%). The number of patients with HT, DM, dementia/Alzheimer's disease, atrial fibrillation were significantly higher in group 2 ($p < 0.001$).

1948 (86.5%) patients in the study had at least one concomitant complaint. The most common concomitant complaints were; 1213 (53.8%) nausea, 851 (37.8%) vomiting, 732 (32.5%) loss of appetite, 577 (25.6%) constipation, and 326 (14.5%) diarrhea. Diarrhea was significantly higher in group 1 ($p < 0.001$).

Examination findings of tenderness (85.5%), defense (40.3%) and, rebound (16.6%) were significantly higher in group 1 ($p < 0.001$).

The total number of patients who had radiological examinations (radiography, ultrasonography, and computed tomography) were 1843 (81.8%). There was no difference between the groups in terms of radiological examination methods ($p = 0.434$; $p = 0.321$; and $p = 0.634$, respectively) (Table 1).

The most common diagnoses were acute gastroenteritis, biliary and biliary tract diseases, and constipation in 348 (15.4%), 257 (11.4%), and 235 (10.4%) patients, respectively. Acute gastroenteritis, nonspecific abdominal pain, abdominal aortic aneurysm were higher in group 1, while biliary and biliary tract diseases, constipation, gastrointestinal tract bleeding, peptic ulcer, diverticulitis and complications, stomach perforation, abdominal aortic dissection, and acute mesenteric ischemia were higher in group 2 ($p < 0.05$) (Table 2) (Figure 1,2,3).

The number of patients whom received medical or surgical treatment were 1765 (78.3%) and 488 (21.7%), respectively. There was no difference between the groups in terms of treatment ($p = 0.478$; $p = 0.182$, respectively).

The total number of discharged patients was 1164 (51.7%), of whom, 832 (71.5%) were in group 1, and 332 (28.5%) in group 2. The patients discharged from group 1 was significantly higher ($p < 0.001$).

Total 273 (12.1%) patients died. Of the patients in group 1, 98 (7.3%) died, and in group 2, 175 (19.1%) died (Figure 5). The number of patients who died in group 2 was significantly higher ($p < 0.001$), and 17 (6.2%) of these patients died in the ED (Figure 6).

Table 1 Comparison of demographic findings and clinical characteristics according to the groups.

	Group 1 (65-74 years)	Group 2 (75 years and above)	p value
Gender, n (%)			
Female	791 (59.1)	612 (66.9)	<0.001
Male	547 (40.9)	303 (33.1)	
Comorbidities n (%)			
Hypertension	250 (18.7)	298 (32.6)	<0.001
Cardiovascular disease	233 (17.4)	172 (18.8)	0.401
Diabetes mellitus	196 (14.6)	203 (25.5)	<0.001
Chronic obstructive pulmonary disease	260 (19.4)	197 (21.5)	0.224
Dementia/Alzheimer's disease	34 (2.5)	167 (18.3)	<0.001
Atrial fibrillation	48 (3.6)	87 (9.5)	<0.001
Others	58 (4.3)	41 (4.5)	0.868
Concomitant complaints n (%)			
Nausea	718 (53.7)	495 (54.1)	0.838
Vomiting	507 (37.9)	344 (37.6)	0.887
Constipation	323 (24.1)	254 (27.8)	0,053
Intestinal gas extraction inability	158 (11.8)	83 (9.1)	0.039
Loss of appetite	439 (32.8)	293 (32)	0.695
Jaundice	57 (4.3)	44 (4.8)	0.537
Dysuria	125 (9.3)	98 (10.7)	0.286
Distension	129 (9.6)	69 (7.5)	0.084
Diarrhea	221 (16.5)	105 (11.5)	<0.001
Examination findings n (%)			
Tenderness	1144 (85.5)	713 (77.9)	<0.001
Defense	539 (40.3)	277 (30.3)	<0.001
Rebound	222 (16.6)	102 (11.1)	<0.001
Radiological examinations methods			
Radiography	414 (30.9)	279 (30.5)	0.820
Ultrasonography	615 (46)	440 (48.1)	0.321
Computed tomography	838 (62.6)	564 (61.6)	0.634

Others: Depression, cerebrovascular disease, cirrhosis, malignancy

Table 2 Comparison of diagnoses by groups.

	Group 1 (65-74 years)	Group 2 (75 years and above)	p value
Diagnosis, n (%)			
Nonspecific abdominal pain	181 (13.5)	41 (4.5)	<0.001
Biliary and biliary tract diseases	126 (9.4)	131 (14.3)	<0.001
Pancreatitis	31 (2.3)	20 (2.2)	0.837
Constipation	111 (8.3)	124 (13.6)	<0.001
Acute gastritis	59 (4.4)	33 (3.6)	0.344
Globe vesicale	45 (3.4)	45 (4.9)	0.064
Urinary tract infection	149 (11.1)	79 (8.6)	0.053
İleus	42 (3.1)	37 (4)	0.252
Peptic ulcer	57 (4.3)	57 (6.2)	0.036
Stomach perforation	18 (1.3)	33 (3.6)	<0.001
Diverticulitis and complications	22 (1.6)	41 (4.5)	<0.001
Gastrointestinal tract bleeding	43 (3.2)	64 (7)	<0.001
Inguinal hernia	25 (1.9)	17 (1.9)	0.986
Strangulated hernia	36 (2.7)	15 (1.6)	0.099
Abdominal aortic aneurysm	79 (5.9)	26 (2.8)	<0.001
Abdominal aortic dissection	13 (1)	27 (3)	<0.001
Appendicitis	11 (0.8)	5 (0.5)	0.444
Acute mesenteric ischemia	14 (1)	24 (2.6)	0.004
Acute gastroenteritis	260 (19.4)	88 (9.6)	<0.001
Others	16 (1.2)	8 (0.9)	0.192

Others: Urolithiasis, colon perforation, malignancy

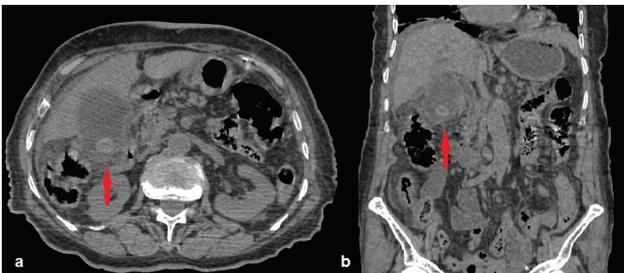


Figure 1 a-b:

Axial and coronal abdominal computed tomography images showing gallbladder perforation in a 78-year-old female patient with acute cholecystitis due to gallstone (red arrows).

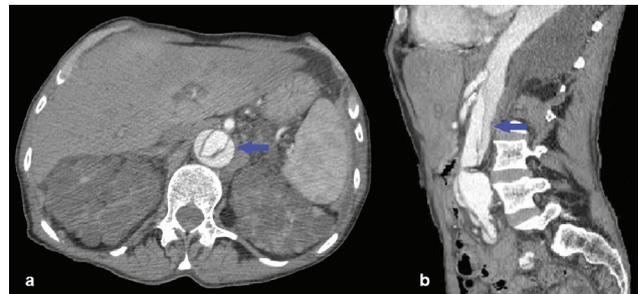


Figure 2 a-b:

Axial and sagittal abdominal computed tomography images showing abdominal aortic dissection (blue arrows) in an 81-year-old male patient.

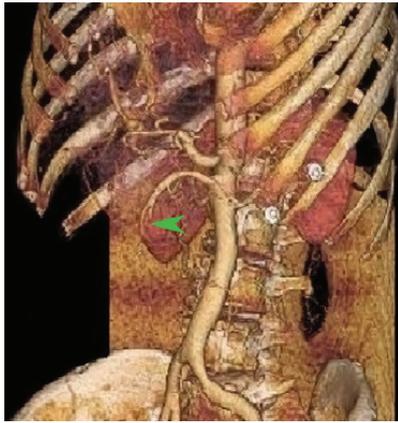


Figure 3: 3D abdominal computed tomography image showing a filling defect in the superior mesenteric artery (green arrowhead) in a 77-year-old male patient with acute mesenteric ischemia.

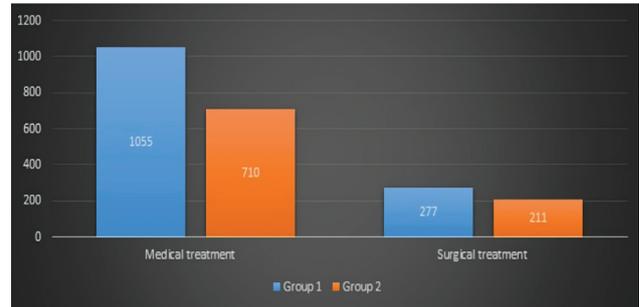


Figure 4: Treatments implemented to the groups.

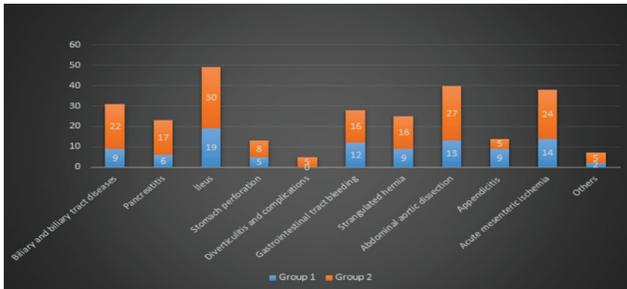


Figure 5: Causes of death in the groups.

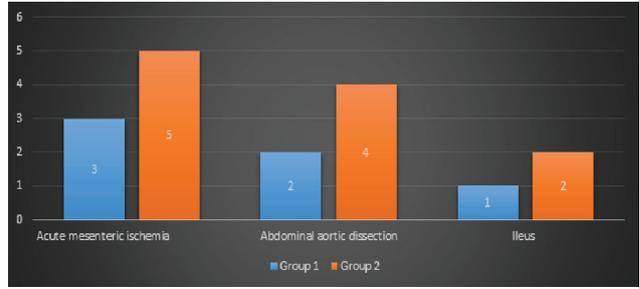


Figure 6: Causes of death in groups in the emergency department.

Discussion

Acute abdominal pain is one of the important causes of ED admissions in geriatric patients. The management of these patients is difficult and time-consuming due to reasons such as an increase in the number of comorbidities due to advanced age and changes in physiological responses. Our study evaluated geriatric patients who applied ED with acute abdominal pain by classification of two age groups.

Compared to young adults, elderly patients are admitted more frequently, constituting 12%-24% of ED applications (8). And approximately 4-24% of elderly patients are admitted with abdominal pain (4,5,9-12). In our study, the percentage of geriatric patients admitted to ED with abdominal pain was 6% and observed to be in parallel with the literature.

In a study conducted on a number of patients aged above 60 years, that was admitted to ED with abdominal pain, 66% of the patients were female (13). Similarly, most of the patients in the study of Henden

Çam et al. were women (4). Laurel et al. classified patients with abdominal pain into three age groups and no significant differences were found in terms of gender in patients aged 65-79 years (14). Of the patients in our study, 62.3% were female. Moreover, the number of female patients in both groups was higher than that of male patients. A previous study observed that it is known that females have a longer life expectancy than males (15). We believe that the same circumstances in that study are also valid for this study in terms of the number of female patients.

In the study conducted by Hustey et al. with patients aged 60-94 with acute abdominal pain, the mean age was 73.2 years (16). In their study, Pérez-Hernández et al. observed the mean age as 78 years (17). In similar studies conducted with geriatric patients in Turkey, Dündar et al. found the mean age as 75.2 years, while Henden Çam et al. found it as 74.8 ± 6.5 (4,18). In the current study, the mean age was 72.2 ± 5.1 , which was lower than mentioned studies. That could be explained by the higher number of patients in the lower age group.

Dündar et al. have classified the patients into three groups by age; there were 52.5% patients in the 65-74 age group, 35.2% in the 75-84 age group, and 12.3% in the ≥ 85 age group in the study (18). In the Henden Çam et al. study, 52.4% of the patients were 65-74, and 47.6% were in the age group ≥ 75 (4). In the current study, 59.4% of the patients were in the 65-74 age group, and 40.6% in the ≥ 75 age group.

The frequency of many comorbidities such as HT, DM, ischemic heart disease increases with age. Some comorbidities may pose a risk for significant pathologies, such as the risk of acute mesenteric ischemia in the presence of atrial fibrillation (19). In addition, it is difficult to communicate with patients diagnosed with such as dementia/Alzheimer's disease, cerebrovascular disease, and depression, which cause limitation in cognitive functions and may result in insufficient examination. Depending on the number of comorbidities, there is an increase in the use of multiple drugs for treatment which causes the process of examining these patients to be substantially more complex. In the study of Öncül et al., geriatric patients with abdominal pain complaints have found DM to be at a rate of 28.8%, HT at 24.4%, and coronary artery disease at 29.7% (20). In the study of Henden Çam et al., it has been observed that HT was present at a rate of 47.2%, DM at 25.7%, and malignancy at 24% (4). In this study, the rate of HT was 24.3%, COPD 20.3%, and DM 17.7%. The higher rate of COPD might be explained by smoking and tobacco use, which often starts at an early age and increasingly damages the lungs over the years. In addition, HT, DM, dementia/Alzheimer's disease and atrial fibrillation were significantly higher in group 2. The fact that the patients in group 2 were older, an increased number of patients with single or multiple comorbidities were expected due to old age.

In some studies, nausea and vomiting were reported to be the most common complaints accompanying abdominal pain in elderly patients (4,9). In a study conducted in ED, abdominal pain was most often accompanied by vomiting (32.8%) and diarrhea (16%). In this study, gastroenteritis accounted for 12.8% of patients' diagnoses in ED (21).

The most common infectious disease in the study of Henden Çam et al. was gastroenteritis, with 10.9% of the 65-74-year-olds and 11.3% of the patients above 75 years of age having diarrhea. Furthermore, diarrhea was observed in 13.2% of internal prediagnoses (4). It has been shown in previous studies that nearly one-third of elderly patients with acute mesenteric ischemia usually experience nausea, vomiting, or

diarrhea that resembles gastroenteritis. Many patients with large bowel obstruction did not experience classic constipation or vomiting, and many of them experience diarrhea (22, 23). We believe that the reason for the prevalence of diarrhea in group 1 may be due to the fact that patients with acute mesenteric ischemia and ileus were also included in this group, and additionally, the number of patients with acute gastroenteritis was greater than in group 2.

The current research has indicated significantly higher physical examination findings in group 1. Abdominal muscles atrophy due to aging and lowered sense of pain due to changes in nerve conduction are observed in elderly patients (24). Therefore elderly patients have a higher chance of providing faint physical examination findings, even with severe abdominal pathologies.

In a study by Miettinen et al., the most common cause of acute abdominal pain in adults was nonspecific abdominal pain (33%) (25). In this study, nonspecific abdominal pain was observed in 9.9% of total study patients, in 13.5% of group 1 patients. In the study by Lewis et al. on abdominal pain, 14.8% was due to nonspecific abdominal pain, 8.6% due to urinary tract infection, 8% due to bowel obstruction, and 6.8% due to gastroenteritis (13). Henden Çam et al. have found in their study that abdominal pain was related to biliary tract diseases (19.6%), nonspecific abdominal pain (11.9%) and, malignancy (9.8%) (4). In another similar study, 23.2% urinary tract infection, 21% peptic ulcer, 15.5% acute gastroenteritis were the causes of abdominal pain (26). The causes of abdominal pain were 15.4% acute gastroenteritis, 11.4% biliary and biliary tract diseases, 10.4% constipation, 9.9% nonspecific abdominal pain in this study. Our study showed that the most common diagnosis of patients was acute gastroenteritis, which was significantly higher in group 1. The elderly become vulnerable to acute gastroenteritis due to weakened immune system, changes in gastrointestinal physiology due to advanced age, and increased use of antacids and antibiotics.

Changes in the biliary system, increased lithogenicity of the bile, and increased incidences of gallstones due to aging cause acute cholecystitis, which is the most common indication for surgery in the elderly population. (22). Gallbladder stones are observed in approximately 50% of patients above 65 years of age in patients with cholelithiasis (27). Moreover, complications of acute cholecystitis such as gallbladder perforation and ascending cholangitis occur in more than half of them (22). Diseases of

the biliary and biliary tract were seen in the second frequency in our study, and it was significantly higher in group 2.

According to data published in previous studies, the frequency of constipation in the general population is between 2-28%, while it is 40% in the elderly and up to 50% in the elderly nursing home residents (28). The prevalence of constipation increases with age due to reasons such as malnutrition, decreased motility, sedentary life, and comorbidities. In our study, while the rate of constipation was 10.4% and was observed to be higher in group 2.

The elderly become susceptible to peptic ulcers due to reasons such as changes in the stomach microbiota, decrease in mucosal protective mechanisms, and increase in *Helicobacter pylori* colonization due to aging. In addition, the increase in the use of nonsteroidal inflammatory drugs, aspirin, anticoagulants, and steroids also contributes to this (23). Complications such as bleeding and perforation are observed more frequently in these patients, and occasionally the first complaint of admission (19,23).

Diverticular disease dramatically increases with age; its incidence reaches 80% in people ≥ 85 , and diverticulitis is observed in 10-20% of these patients (23). The higher incidence of diverticulitis and complications in group 2 is due to the fact that this group consists of an increased number of older people.

One of the most common surgical emergencies in young people is appendicitis. It is observed with a rate of 5-10% in the elderly (29). In the study conducted by Mert et al., in 11.9% of patients aged ≥ 65 , there was appendicitis. (10). In the study of Henden Çam et al., 1.8% of the patients had appendicitis, and the majority were in the 65-74 age group (4). In this study, appendicitis was at 0.7%, which is lower than in previous studies. However, similar to the age group of the previous study, the majority of the patients with appendicitis were in group 1.

It should not be overlooked that elderly patients with some rare vascular disorders may suffer from acute abdominal pain; the mortality of acute mesenteric ischemia and abdominal aortic dissection resulting from these diseases is quite high. The incidence of acute mesenteric ischemia has increased approximately ten times in 80-year-old patients compared to 60-year-olds (25). Older men using tobacco who have HT and/or peripheral vascular disease are at high risk for an acute abdominal aneurysm (22). Furthermore,

advancing age HT and smoking increase the risk of abdominal aorta dissection, which is a catastrophic event.

Physical examination and laboratory findings may provide faint results in elderly patients; therefore, radiological examinations play an important role. CT strongly influences clinical management in these patients (30). In this study, CT was the most commonly used radiological examination method.

At least 50% of the patients who are admitted to ED with abdominal pain are hospitalized, and 30-40% are treated surgically (31). In the study conducted by Papas et al., the rate of surgical treatment was 9% in patients under 65 years with acute abdominal pain, while it was 8% above 65 years of age, and observed results concluded no statistically significant difference (12). In the study of Henden Çam et al., the surgical rate was 14.2% in the 65-74 age group, while the surgical rate was 21.2% in the ≥ 75 years group (4). In this study, the surgical rate was 20.7% in group 1 and 23.1% in group 2, which coincides with previous studies.

The mortality rate in these patients varies between 2-13% (22). In the study of Durukan et al. conducted with 106 elderly patients admitted to ED with abdominal pain, no patients died in ED (9). However, it is important to underline that the number of patients included in this study was much lower compared to our study. In the study of Durukan et al., the mortality rate in hospitalized patients was 11.9%. In addition, the total number of patient death was 8, and details were as follows; 2 of these patients who died had acute mesenteric ischemia, 2 had acute cholecystitis, 2 had bleeding of the upper gastrointestinal tract, 1 had ileus, 1 had intestinal perforation (9). In the study of Henden Çam et al., the mortality rate was 12.2%, and this rate was 8.5% within the group aged 65-74 years and 16.2% in the group aged 75 years above (4). In the current study, the mortality rate within the hospital was 12.1%, which was in line with the findings of the relevant studies in the literature. In addition, the mortality rate in group 2 (19.1%) was observed to be significantly higher. This could be explained by the higher incidence of comorbidities in group 2, such as DM, HT, etc., and other serious diseases such as abdominal aortic dissection.

Our study is a single-center study with shortcomings related to any retrospective study. We do not have data on whether additional pathologies occurred in hospitalized patients. Moreover, we do not have any information about whether the patients discharged

from ED were admitted to other hospitals for the same reason in the short term and about their diagnoses and hospitalization.

Conclusion

Evaluation of geriatric patients presenting to ED with acute abdominal pain is a challenging process. Awareness of the physiological changes that occur with aging has an important place in the management of geriatric patients. In these patients, weakness in physical examination findings, increase in comorbidities affecting mortality, and therefore increased mortality are observed due to aging. Our study is important in terms of investigating the effects of certain parameters on treatment and mortality in geriatric patients admitted to the ED with abdominal pain. Future studies should support a more detailed examination of other parameters or treatment processes with high case numbers.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

Ethical Approval

University of Health Sciences Dışkapı Yıldırım Beyazıt Training and Research Hospital, Clinical Research Ethics Committee approved the study (number: 106/30, date: 08/3/2021).

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