ORIGINAL ARTICLE

Variables affecting mortality rates in patients undergoing emergency abdominal surgery: A retrospective cross-sectional study

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ABSTRACT

BACKGROUND: Patients operated under emergency conditions have a higher risk of death and complications than those performed under elective conditions. Especially the patient group with high comorbidity needs to be evaluated more specifically. According to the surgical risk and American Society of Anesthesiologists (ASA) scoring, the perioperative risk should be determined quickly, and the relatives of the patients should be informed. This study aimed to evaluate the factors affecting mortality and morbidity in patients undergoing emergency abdominal surgery.

METHODS: A total of 1065 patients aged 18 years and older who underwent emergency abdominal surgery in 1 year were included in the study. The primary aim of this study was to determine the mortality rates in the first 30 days and 1 year and the variables affecting these rates.

RESULTS: Of 1065 patients, 385 (36.2%) were female and 680 (63.8%) were male. The most common procedure was appendectomy (70.8%), followed by diagnostic laparotomy (10.2%), peptic ulcus perforation (6.7%), herniography (5.5%), colon resection (3.6%), and small bowel resection (3.2%). There was a significant difference between the age of the patients and mortality ($p<0.05$). There is no statistically significant relationship between gender and mortality. A statistically significant correlation was found between ASA scores, perioperative complication, perioperative blood product use, reoperation, intensive care unit admission, hospitalization time, perioperative complication, and 30-day mortality and 1-year mortality. There is a significant relationship between trauma and only 30-day mortality ($p=0.030$).

CONCLUSION: The morbidity and mortality of patients operated on under emergency conditions increased compared to elective surgical operations, especially those over age 70. The 30-day mortality rate of patients who underwent emergency abdominal surgery is 3%, while the 1-year mortality rate is 5.5%. Mortality rates are higher in patients with a high ASA risk score. However, mortality rates in our study were found to be higher than the mortality rates in ASA risk scoring.

Keywords: Anesthesia; complications; emergency; laparotomy; mortality.

INTRODUCTION

It was observed that patients who were operated on in emergency conditions had a higher mortality rate compared to those who underwent the same surgical procedure under elective conditions. In addition, major and minor post-operative complications are 2 or 3 times higher in emergency operations compared to elective surgeries.[1,2]

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While one group of patients undergoing emergency abdominal surgery, even the majority, is young patients with less comorbidity, the other group is a heterogeneous group of elderly patients with high comorbidity and a high risk of post-operative complications and death. Since the number and severity of complications arising from anesthesia may be higher in this patient group than in elective surgical procedures, patients should be evaluated primarily.[3] However, pre-operative preparation cannot be entirely done because there is not enough time for clinical evaluations. In a study conducted in the United States, seven emergency general surgery procedures, including partial colectomy, small bowel resection, cholecystectomy, operative treatment of peptic ulcer disease, lysis of peritoneal adhesions, appendectomy, and laparotomy were found to be responsible for the majority of hospitalizations, deaths, and complications of emergency general surgery cases within a year.[4,5] A multivariate study showed that 30-day mortality in emergency abdominal surgery was significantly associated with the American Society of Anesthesiologists (ASA) classification score (ASA ≥3), type of surgery, presence of stoma, and anastomotic leak.[6]

Especially in elderly patients, 40% of gastrointestinal surgeries are performed under emergency conditions.[7] Patients undergoing emergency major bowel surgery have high mortality rates, and most patients are elderly and have multiple comorbidities.[5] More than 110,000 patients were examined in a recent systematic review in 20 studies undergoing emergency abdominal surgery and risk assessment, and APACHE II, ASA, and P-POSSUM scoring systems were found to be the most commonly used scoring systems.[8] It has been emphasized that other scoring systems should also be used, for which ASA is insufficient to predict risk, especially in patients over 65 years of age.[9]

This study aimed to evaluate the factors affecting mortality and morbidity in patients undergoing emergency abdominal surgery. The secondary aim of our study is to evaluate the relationship between ASA score and blood transfusion with mortality. Predictable risks to reduce morbidity and mortality can help establish clinical protocols for emergency abdominal surgery patients. These protocols may improve overall outcomes in the high-risk patient group, and further studies are needed. We believe that this study will contribute to the literature since there are few studies in Turkey about the risks affecting mortality and morbidity in patients undergoing emergency abdominal surgery.

MATERIALS AND METHODS

After the approval of the local ethics committee of our hospital (No: 2016/13, Subject No: KAEK/2016.12.13), a total of 1065 patients aged 18 years and over who underwent emergency abdominal surgery between January 2015 and December 2016 were evaluated retrospectively. The primary aim of this study was to determine the mortality rates in the first 30 days and 1 year and the variables affecting these rates. Information about the patients was obtained from the information system of our hospital (Ministry of Health Kanuni Sultan Suleyman Training and Research Hospital) and anesthesia records. Age, gender, and ASA scores of the patients were recorded. Operations, presence of trauma, whether blood and blood products were transfused, complications developing after surgery and during surgery, length of hospital stay, length of stay in the intensive care unit, deaths in the first 30 days and 1 year after surgery, duration of surgery, whether reoperation was performed, hospital readmissions were examined and evaluated. All data were investigated in terms of their effects on morbidity, mortality, and hospital and intensive care unit duration.

Statistical Analysis

Statistical Package for the Social Sciences 24.0 program was used to evaluate and analyze the data obtained in the study. Descriptive statistics were presented as numbers and percentages for discrete variables and median (most minor to most considerable) for continuous variables. Independent samples t-test were used when the assumption of normal distribution was provided for independent pairwise group comparisons for continuous variables. For categorical variables, Chi-square test statistics were used in multiple and pairwise group comparisons, and Logistic Regression analysis was used to examine the relationship between dependent and independent variables. The statistical significance level was accepted as $p<0.05$.

RESULTS

Data of 1065 patients who underwent emergency abdominal surgery in 1 year were obtained and included. Of the patients, 385 (36.2%) were female, 680 (63.8%) were male, the mean age was 37, and the median was 33 (range 18–91). 90.8% of the patients were ASA1 E and ASA2 E, 6% were ASA3 E, and 3.2% were ASA4 E and ASA5 E (Table 1).

While a single surgical procedure was performed in 926 patients during the operation, more than one intervention was

Table 1. Demographic characteristics of patients, n=1065, %

Demographic characteristics	n	%
Age, median (range) years	33 (18–91)	
Female gender	385	36.2
Male gender	680	63.8
ASA score		
1 E	691	64.9
2 E	276	25.9
3 E	64	6.0
4 E	23	2.2
5 E	11	1.0

Table 2. In-hospital mortality rates and percentages of patients undergoing surgery

Surgical procedure	Number of patients	%	Mortality (30 days)	%	Mortality (1 year)	%
Appendectomy	754	70.8	2	0.3	5	0.7
Cholecystectomy	27	2.5	0	0.0	0	0.0
Peptic ulcer perforation repair	71	6.7	2	2.8	3	4.2
Colon resection	38	3.6	5	13.2	14	36.8
Small bowel resection	34	3.2	7	20.6	11	32.4
Laparotomy	109	10.2	13	11.9	22	20.2
Abscess, peritonitis	19	1.8	1	5.3	3	15.8
Herniography	59	5.5	3	5.1	6	10.2
Mesenteric ischemia	3	0.3	0	0.0	1	33.3
Necrotizing fasciitis, Fournier's gangrene	7	0.7	2	28.6	2	28.6
Vacuum-assisted closure (VAC)	28	2.6	6	21.4	9	32.1
Gastrointestinal system malignancy	20	1.9	5	25.0	11	55.0
Other	65	6.1	11	16.9	13	20.0
Single operation	929	87.2	15	1.6	29	3.1
Multiple operations	136	12.8	17	12.5	30	22.1

Table 3. Peroperative complication, reoperation, blood transfusion and intensive care

	Reoperation	Blood transfusion	Intensive care	Perioperative complication
None	992	1010	944	976
There is	62	44	110	78
Total	1054	1054	1054	1054

performed in 136 patients. The most common procedure was appendectomy (70.8%), followed by diagnostic laparotomy (10.2%), peptic ulcus perforation (6.7%), herniography (5.5%), colon resection (3.6%), and small bowel resection (3.2%) (Table 2 and Fig. 1).

The 1-year mortality rates were 36.8% and 32.4%, respectively, in the patient group who underwent colon and small intestine surgery. In the patient group with gastrointestinal system (GIS) malignancy, 1-year mortality was the highest (55%). In the appendectomy, cholecystectomy and peptic ulcus perforation, 1-year mortality rates are low (0.7%, 0.0%, and 4.2%, respectively). On the 30th day mortality; it was 0.3% in appendectomy, 0.0% in cholecystectomy, 2.8% in peptic ulcus perforation, 25.0% in GIS malignancy, 20.6% in small bowel resection, and 13.2% in colon resection (Table 2 and Fig. 1).

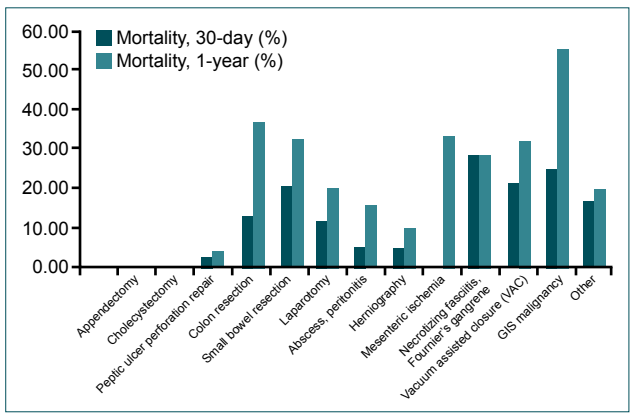

Figure 1. 30-day and 1-year mortality rates.

944 patients were sent to the postoperative service, and 110 patients required a postoperative intensive care unit. 62 of the patients were re-operated (Table 3). Perioperative complications were complications such as sepsis, anastomotic leakage, organ failure, respiratory and cardiovascular complications, brid ileus, abdominal distention, fistula, bleeding, wound infection, organ injury, deep vein thrombosis, embolism, and ischemia (Table 4).

The mean age of patients with 30-day mortality (58.81±19.41) was higher than the mean age of patients without mortality (36.33±15.25). The mean age of patients with 1-year mortality was also higher (60.41±17.99) than patients without mortality (35.64±14.61). These results show that patients with

Table 4. Perioperative complications and their frequency

Complications	Number of patients	%
No complications	943	88.54
Sepsis	16	1.50
Anastomotic leak	9	0.85
Organ failure	11	1.03
Respiratory system complication	38	3.56
Cardiovascular complication	52	4.88
Brid, ileus, abdominal distension, fistula	5	0.47
Bleeding	14	1.31
Wound infection	23	2.16
Organ injury	3	0.28
Deep vein thrombosis, embolism, ischemia	2	0.19
Other	3	0.28

Table 5. 30-day mortality results

Variables	Number of patients	Mean±SD	p*-value
Age			
There is	32	58.81±19.41	0.000
None	1033	36.33±15.25	
Operation time			
There is	31	103.25±49.69	0.000
None	1025	63.64±37.71	
Length of hospitalization			
There is	32	11.91±10.25	0.000
None	1031	4.37±6.82	
Length of intensive care hospitalization			
There is	32	8.50±8.10	0.000
None	1030	0.70±4.25	0.000

All results are stated as mean±standard deviation. *P<0.05 was considered statistically significant.

Table 6. 1-year mortality results

Variables	Number of patients	Mean±SD	p*-value
Age			
There is	59	60.41±17.99	0.000
None	1005	35.64±14.61	
Operation time			
There is	58	110.24±60.00	0.000
None	997	62.18±35.34	
Length of hospitalization			
There is	59	14.75±13.78	0.000
None	1003	4±5.94	
Length of intensive care hospitalization			
There is	59	9.63±12.84	0.000
None	1002	0.42±2.86	

All results are stated as mean±standard deviation. *P<0.05 was considered statistically significant.

Table 7. Morbidity, 30-day, and 1-year mortality percentages of patients who were operated on urgently

	Percent (%)
Morbidity	7.7
Mortality (30 days)	3
Mortality (1 year)	5.5

mortality have a higher age than those without. There is a significant difference between the age of the patients and the mortality rates (p<0.05) (Tables 5 and 6).

The operation times of patients with both 30-day and 1-year mortality are longer than patients without mortality. There is a significant difference between the duration of the operation and the mortality rates of the patients (p<0.05) (Tables 5 and 6).

The mean duration of hospitalization (11.91±10.25 days) of patients with 30-day mortality was higher than the mean (4.37±6.82 days) of patients without mortality. The mean duration of hospitalization (14.75±13.78 days) of patients with 1-year mortality was higher than the mean duration of hospitalization (4±5.94) of patients without mortality. There is a significant difference between the length of hospital stay and mortality rates (p<0.05) (Tables 5 and 6). The data obtained show that patients with 30-day and 1-year mortality have more extended intensive care unit stays than those without mortality (p<0.05) (Tables 5 and 6).

The 30-day mortality rate was 3%, and the 1-year mortality rate was 5.5% in all patients. Post-operative morbidity was 7.7%. The 30-day mortality was 2.09% at age <70 years and 18.97% at age >70 years. The 1-year mortality was 3.77% at age <70 years and 36.20% at age >70 years (Table 7 and Fig. 2).

There was no statistically significant relationship between the gender variable and the 30th-day mortality variable (p=0.098), and no statistically significant relationship was found between the 1-year mortality variable (p=0.135). There is a statistically significant correlation between ASA scores and 30-day mortality and 1-year mortality (p=0.000). While there is a

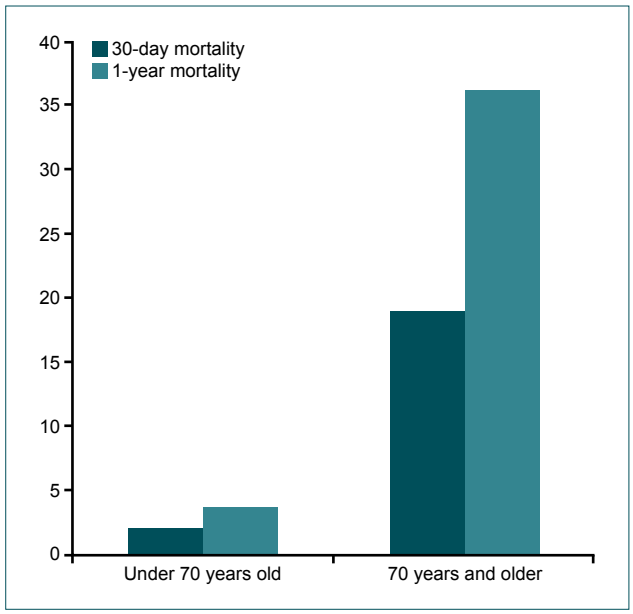

Figure 2. Age and mortality relationship.

statistically significant relationship between trauma and 30-day mortality (p=0.030), there is no significant relationship between 1-year mortality (p=0.458). A statistically significant relationship was found between the intensive care variable and 30-day and 1-year mortality (p=0.000). There is a statistically significant relationship between the variables of perioperative complication, reoperation, use of blood products and the 30th day and 1-year mortality variables (p=0.000) (Table 8).

When the causes of death are interpreted, for 30-day mortality, all deaths in patients under age 70 are due to surgical causes, and bleeding due to trauma surgery and complications due to bleeding are in the first place. Other causes were considered sepsis and sepsis-related acute respiratory distress syndrome (ARDS) and multiorgan failure (MOF). For those over age 70, 81.8% of deaths in the first 30 days were due to surgery, and sepsis and its complications took the first place in deaths. Non-surgical causes were 18.2% of the 30-day mortality over age of 70, and cardiovascular-related deaths, which also contributed to anesthesia and surgical stress, were

Table 8. The relationship between mortality and variables

	30-day mortality		p-value	1-year mortality		p-value
Number of patients	**There is**	**None**		**There is**	**none**	
Trauma, n (%)						
There is	5 (7.4)	63 (92.6)	0.030	6 (8.8)	62 (91.2)	0.458
None	27 (2.7)	970 (97.3)		53 (5.3)	970 (94.7)	
Intensive care, n (%)						
There is	28 (24.8)	85 (75.2)	0.000	45 (40.2)	67 (59.8)	0.000
None	4 (0.4)	948 (99.6)		14 (1.5)	938 (98.5)	
Perioperative complication, n (%)						
There is	24 (30.4)	55 (69.6)	0.000	33 (41.8)	46 (58.2)	0.000
None	8 (0.8)	978 (99.2)		26 (2.6)	959 (97.4)	
Postoperative complication, n (%)						
There is	27 (32.9)	55 (67.1)	0.000	41 (50.0)	41 (50.0)	0.000
None	5 (0.5)	978 (99.5)		18 (1.8)	964 (98.2)	
Reoperation, n (%)						
There is	12 (18.2)	54 (81.8)	0.000	20 (30.3)	46 (69.7)	0.000
None	20 (2.0)	976 (98.0)		39 (3.9)	956 (96.1)	
Use of blood products, n (%)						
There is	16 (32.7)	33 (67.3)	0.000	20 (40.8)	29 (59.2)	0.000
None	16 (1.6)	1000 (98.4)		39 (3.8)	976 (96.2)	
Gender, n (%)						
Male	16 (2.4)	664 (97.6)	0.098	31 (4.6)	648 (95.4)	0.135
Woman	16 (4.2)	369 (95.8)		28 (7.3)	357 (92.7)	
ASA score, n (%)						
1E	1 (0.1)	690 (99.9)	0.000	3 (0.4)	687 (99.6)	0.000
2E	2 (0.7)	274 (99.3)	0.000	7 (2.5)	269 (97.5)	0.000
3E	5 (7.8)	59 (92.2)	0.000	20 (31.2)	44 (68.8)	0.000
4E	15 (65.2)	8 (34.8)	0.000	20 (90.9)	3 (9.1)	0.000
5E	9 (81.8)	2 (18.2)	0.000	9 (81.8)	2 (18.2)	0.000

P<0.05 was considered statistically significant.

Table 9. 30-day mortality causes

30-day mortality	Surgical reasons	%	Non-surgical reasons
70 years and older	9	81.8	2
Under 70 years old	21	100	0
Total	30	93.7	2

Table 10. 1-year mortality causes

1-year mortality	Surgical reasons	Non-surgical reasons	Total
	n (%)	n (%)	n (%)
70 years and older	13 (61.9)	8 (38.1)	21 (100)
Under 70 years old	29 (76.3)	9 (23.7)	38 (100)
Total	42 (71.2)	17 (28.8)	59 (100)

the leading ones. About 76.3% of the patients under age 70 were found to be related to surgery again, considering the 1-year mortality. The most common cause of mortality was cancer metastasis and respiratory failure, followed by MOF. One-year non-surgical deaths (23.7%) under age 70 were reported as cardiovascular problems (Tables 9 and 10).

DISCUSSION

The High ASA score and old age affect the mortality and morbidity of patients who will undergo emergency surgery. The number of the elderly population is increasing rapidly all over the world. It is estimated that the rate of the population over 65 years old will reach 10% of the general population by 2025 in Turkey. Emergency surgical interventions are becoming more common in the elderly with high comorbidity and perioperative complication rates.[5,10,11] Since the mortality rate is high in emergency laparotomy, especially over 70 years of age, positive results can be obtained in morbidity, mortality, and hospital stay by improving the quality of perioperative care with a multidisciplinary approach. Because of the high mortality and morbidity associated with surgery in acute abdominal operations, improving outcomes, especially in elderly patients, is to electively manage diseases that require surgery. Early surgery of elderly patients with previously known diseases (such as abdominal hernia and gallstone disease) is critical in reducing morbidity and mortality.[10,12] Anesthesia management is challenging in emergencies, and patient safety depends on the working team's skills, attention, and experience. In this respect, anesthesia management of emergency cases should be performed by experienced anesthesiologists or under their supervision.[3]

Most patients operated on for acute abdomen are young patients with low comorbidity, short hospital stay, and low morbidity and mortality. The other patient group is the elderly patients with high comorbidity, usually operated on due to acute abdomens such as perforation, ileus or malignant disease, with a high risk of post-operative complications and death.[13]

It is reported that the probability of death of patients who are operated on under emergency conditions is 8 times higher than that of patients who undergo the same operation under elective conditions.[4] In the study of Havens et al.,[2] it was shown that emergency general surgery operations are an independent risk factor for mortality and morbidity. Sorensen et al.[1] reported that 30-day mortality after elective surgery was 2.8%, significant complications were 11.5%, and when the same operations were performed under emergency conditions, mortality was 13.8%, and morbidity was 30.1%.

Anesthesia complication is more common in emergency surgical procedures than elective surgery, and patients need special consideration. Anesthesia management of high-risk patients with comorbidities should be performed by an experienced anesthesiologist, especially for early recognition of perioperative complications, taking organ supportive measures in the intraoperative period, planning of post-operative care, critical care, and multidisciplinary management.[3,14]

In the study of Scott et al.,[4] in the United States, the majority of emergency general surgery cases in a year are more than hospitalizations; it has been reported that procedures including partial colectomy, small bowel resection, cholecystectomy, operative treatment of peptic ulcer disease, lysis of peritoneal adhesions, appendectomy, and laparotomy are responsible. Our study showed that the most common procedures were appendectomy, diagnostic laparotomy, peptic ulcus perforation, herniography, colon resection, small bowel resection, and cholecystectomy.

In the study of Watt et al.,[5] 30-day mortality was 12%, and 1-year mortality was 25% in patients undergoing emergency abdominal surgery. It is observed that there is a high mortality rate, especially in elderly patients who have multiple comorbidities and undergo emergency bowel surgery.[15,16] Acute appendicitis is the most common reason for acute abdominal surgery in the young patient population, and this rate is relatively low in the elderly population. Many studies have reported that elderly patients undergo emergency abdominal surgery primarily because of acute cholecystitis, and their mortality and morbidity rates are high.[17,18] 30-day mortality was 3% in this study, and 1-year mortality was 5.5%. We think that mortality is low because 70.8% of the patients who applied to our hospital's emergency department within 1 year and were operated on under emergency conditions were young and healthy individuals (90.8%) who had an appendectomy and were in the ASA1 and ASA2 risk groups. In patients who underwent colon and minor intestine surgery, mortality rates were high (36.8% and 32.4%, respectively, 1-year mortality). To reduce mortality in this high-risk pa-

tient group, minimizing stress, providing systemic hemodynamics and oxygenation, meticulous regulation of electrolyte and fluid therapy, and multimodal analgesia may be effective in the perioperative anesthesia management of the patient.[14,15]

In our study, surgical causes were found to be high in 1-year mortality in both patients over 70 years old and under 70 years old (61.9% and 76.3%, respectively). Among the surgical causes, deaths due to complications (such as anastomotic leakage and intra-abdominal sepsis) who underwent emergency bowel surgery and developed later drew attention. The most common non-surgical causes of mortality over the age of 70; it was observed that there were organ failures caused by their diseases (especially due to malignancy) and related complications.

For 30-day mortality in patients under 70 years of age, all deaths were due to surgical causes, bleeding due to trauma surgery and complications caused by bleeding were in the first place. Other causes were sepsis and sepsis-related ARDS and MOF. This result revealed the importance of managing blood products in perioperative care. Although emergency abdominal trauma had a role in the increase in 30-day mortality, it was observed that it did not affect 1-year mortality. In people over 70 years of age, 81.8% of 30-day deaths were due to surgery, and sepsis and complications were first. About 18.2% of deaths were due to non-surgical causes, and cardiovascular-related deaths, also contributed by anesthesia and surgical stress, were the leading cause.

A meta-analysis of studies conducted between 2010 and 2019 shows that comorbidity alone does not significantly affect the mortality of elderly patients undergoing emergency abdominal surgery.[19] It is thought that the type of comorbidity (such as dysthymia, heart failure, kidney failure, and chronic obstructive pulmonary disease) is more important than the number or presence of comorbidity in terms of postoperative prognosis. In other studies, it is stated that the presence of physiological disorders such as renal failure, sepsis or shock and comorbidities increase mortality more than elective surgery in elderly patients undergoing emergency surgery.[20,21]

It has been reported that mortality and morbidity increase as age and ASA-score increase in patients who underwent emergency laparotomy.[2,22,23] Many studies show that mortality increases by 4% every 10 years after age 50 and that this increase is significant after age 70.[5,24,25] Our study also supports this finding; it is seen that mortality increases as the ASA score and age increase in patients. When possible, elective surgery is recommended instead of emergency intervention to keep systemic diseases under control, especially in elderly patients, as death rates increase due to accompanying medical comorbidities as they get older.[10]

A significant relationship was found between the duration of surgery and hospitalization and mortality. Both the duration of the operation and the length of stay in the hospital show that the surgical procedure and the post-operative period are complicated. Our findings support studies showing that prolonged surgery and hospital stay are associated with an increased risk of complications.[10,26]

In another study by Watt et al.,[5] it was shown that among patients who were operated on for emergency general surgery, those taken to the postoperative service had lower 30-day mortality. This result was associated with younger patients and less invasive surgery. This study observed that both 30-day mortality and 1-year mortality rates were higher in patients who were sent to the intensive care unit after surgery. In addition, a significant relationship was found between mortality and perioperative complications, reoperation, and blood product use. In the study of Sorensen et al.,[1] blood loss, comorbidity, and reoperation were the determinants of complications, independent of elective and emergency surgery, and were associated with mortality.

In our study, we have found that blood and blood product transfusion increases mortality. In a cohort study of 30-day in-hospital morbidity and mortality rates; in patients undergoing major abdominal surgery (such as esophagectomy, pancreatectomy, colectomy, small bowel resection, laparoscopic gastrointestinal resection, and open abdominal aortic aneurysm), erythrocyte transfusion applied within the first 72 h perioperatively has been found to increase both mortality and morbidity. Transfusion strategies should be determined, and the clinical decision-making process should be well managed to minimize the harms of blood transfusion.[27]

Optimal provision of multidisciplinary perioperative care has good results for the patient and the health system. There are serious knowledge gaps in perioperative care regarding emergency general surgery operations, especially for the geriatric population. Anesthesiologists are uniquely positioned to fill knowledge gaps, including optimizing intraoperative care, providing appropriate acute postoperative follow-up, and therapeutic principles in perioperative care in the geriatric patient group.[28]

Since factors such as high ASA score and advanced age increase the risk of anesthesia in patients scheduled for emergency surgery, for successful anesthesia management and positive perioperative results; necessary precautions should be taken with a multidisciplinary approach, and the patient's relatives should be informed; information should be given by giving mortality rates. These rates are reported as 0.06–0.08% for ASA1, 0.27–0.4% for ASA 2, 1.8–4.3% for ASA 3, 7.8–23% for ASA 4, and 9.4–51% for ASA5. In our study, only the ASA scale was used to predict mortality. However, as stated in the findings of this study, ASA-related mortality rates were found to be higher. The reason for this can be explained by the fact that the patients were operated on under emergency conditions. When ASA classification is made under emergency

conditions, it is indicated as E after the number (like ASA1E). This expression indicates that the risk is increased. However, studies have emphasized the necessity of using other scoring systems where ASA is insufficient to predict risk, especially in patients over 65 years of age.[9]

Contribution of our study to the literature;

a. The 30-day mortality rate of patients who underwent emergency abdominal surgery is 3%, while the 1-year mortality rate is 5.5%.
b. The 1-year mortality rate is 3.77% at age <70 years and 36.2% at age >70 years.
c. While predicting mortality rates in emergency abdominal surgery, other validated scoring systems should be used besides the ASA score.
d. Although emergency abdominal trauma had a role in increasing 30-day mortality, it did not affect 1-year mortality.
e. The use of blood and blood products increases both 30-day and 1-year mortality.

Limitations of our study;

a. Since the causes of comorbidity of the patients who underwent emergency surgery were not recorded, the relationship between the causes of comorbidity and mortality was not examined.
b. The fact that other scorings were not used besides ASA while predicting the mortality risk of our patients.
c. The relationship between the amount of blood and blood products given to the patients and mortality has not been examined.

Conclusion

The morbidity and mortality of patients operated on under emergency conditions increased compared to elective surgical operations, especially those over age 70. The 30-day mortality rate of patients who underwent emergency abdominal surgery is 3%, while the 1-year mortality rate is 5.5%. Mortality rates are higher in patients with a high ASA risk score. However, mortality rates in our study were found to be higher than the mortality rates in ASA risk scoring. In this respect, in addition to the ASA score, scoring systems that include hemodynamic and biochemical parameters at the time of admission to the hospital should also be used.

Ethics Committee Approval: This study was approved by the Ministry of Health Kanuni Sultan Suleyman Training and Research Hospital Clinical Research Ethics Committee (Date: 23.12.2016, Decision No: 13).

Peer-review: Externally peer-reviewed.

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ORİJİNAL ÇALIŞMA - *ÖZ*

Acil batın cerrahisi geçiren hastalarda mortalite oranlarını etkileyen değişkenler: Geriye dönüm kesitsel çalışma

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AMAÇ: Acil şartlarda opere edilen hastaların ölüm ve komplikasyon riski elektif şartlarda yapılan operasyonlara göre daha fazladır. Özellikle komorbitesi fazla olan hasta grubunun özel olarak değerlendirilmeleri gerekmektedir. Cerrahi risk ve ASA skorlamasına göre hızlıca peroperatif risk belirlenip hasta yakınları bilgilendirilmelidir. Bu çalışmada, acil batın cerrahisi geçiren hastalarda mortalite ve morbiditeyi etkileyen faktörleri değerlendirmeyi amaçladık.

GEREÇ VE YÖNTEM: Bir yıl içinde acil batın cerrahisi geçiren 18 yaş ve üzeri toplam 1065 hasta çalışmaya dahil edildi. Bu çalışmanın amacı, ilk 30 gün ve bir yıl içindeki mortalite oranlarını ve bu oranları etkileyen değişkenleri tespit edebilmekti.

BULGULAR: 1065 hastanın 385'i (%36.2) kadın, 680'i (%63.8) erkek idi. En yaygın prosedür apendektomi (%70.8) olup, ardından tanısal laparotomi (%10.2), peptik ulcus perforasyonu (%6.7), herniografi (%5.5), kolon rezeksiyonu (%3.6), ince bağırsak rezeksiyonuydu (%3.2). Hastaların yaşı ile mortalite arasında anlamlı fark bulundu ($p<0.05$). ASA skorları, peroperatif komplikasyon, peroperatif kan ürünü kullanımı, reoperasyona alınma, yoğun bakıma yatış, hastane yatış süresi ve peroperatif komplikasyon ile 30. gün mortalite ve bir yıllık mortalite arasında istatistiksel açıdan anlamlı ilişki bulundu. Travma ile sadece 30. gün mortalite arasında anlamlı bir ilişki vardır ($p=0.030$).

TARTIŞMA: Acil şartlarda opere edilen hastaların morbidite ve mortaliteleri, özellikle 70 yaş üzerinde elektif cerrahi operasyonlara göre artış göstermiştir. Acil karın ameliyatı geçiren hastaların 30 günlük mortalite oranı %3 iken bir yıllık mortalite oranı %5.5'dir. ASA risk skoru yüksek olan hastalarda mortalite oranları daha yüksektir. Ancak çalışmamızdaki mortalite oranları ASA risk skorlamasındaki mortalite oranlarına göre daha yüksek olarak bulunmuştur.

Anahtar sözcükler: Acil; anestezi; komplikasyonlar; laparotomi; ölüm oranı.

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