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ORIGINAL ARTICLE

Outcome Prospective of Late Duodenal Perforation Repairs in Elderly

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ABSTRACT

Introduction: Perforated duodenal ulcer is the communal emergency seen in surgical department, and postoperative complications of this emergency surgeries are very high which requires the related factors identification with this incidence.
Aim: This study was designed to evaluate duodenal ulcer in older patients by revealing the patient's health status, early and late repair, choice of surgical procedure, and differences between older and younger duodenal ulcer patients.
Study Design: A Retrospective study.
Place and duration: In the Surgical Unit 2 of, Sheikh Zayed Medical College/ Hospital Rahim Yar Khan for two-year duration from January 2020 to December 2021.
Methods: This study included 140 patients were alienated into 2 age groups as geriatric patients' group (A) and adult age group (B). Patient age, gender, co-morbidities, drug use, presence of Helicobacter pylori infection, medical conditions that may have been affected by perforation, such as characteristic pain (severe upper abdominal pain or vague abdominal pain), extent of symptoms at presentation, smoking, outcomes of late repair versus early repair was recorded.
Results: 140 patients were registered in the analysis. Group I (n = 70) consisted of geriatric patients (age> 65) and Group-II (n = 70) adults' patients (age <65). Both groups have male dominance in this study. In both groups, the most common comorbidities were diabetes (25.7% and 8.6%, respectively) and arterial hypertension (42.8% and 41.4%, respectively), hypertension (p = 0.002) and coronary artery disease (p = 0.035) was much high in group I, while morbidity and mortality were higher in the group of elderly patients.
Conclusion: Duodenal perforation is a serious disease that requires urgent surgical intervention, especially in the geriatric age.
Keywords: Duodenal ulcer perforation, acute abdomen, geriatric surgery.

INTRODUCTION

A perforated duodenal ulcer is a surgical emergency that is often questioned by general surgeons. Patients often present with symptoms of peritonitis[1-2]. Duodenal ulcer perforation is most common in surgical practice and occurs as a peptic ulcer disease complication, overuse of NSAIDs and stomach cancer[3]. Currently, the highest life span for duodenal ulcer perforation is between 40 and 60 years. The incidence of duodenal perforation is from seven to ten cases per million adults per year. The site of perforation usually covers the anterior duodenal wall (60%), but may happen in antral (21%) and less in cardinal part (22%)[4-5]. While duodenal ulcer (DU) is a serious injury in western countries, gastric ulcer is more common in eastern countries. About 10% of young people are infected with H. pylori, and this proportion of infection increases with age. Duodenal ulcers cause significant morbidity, mostly pain related, as well as hospitalization for complications such as ulcer bleeding, obstruction, peritonitis, and perforation[6-7]. In recent years, an increasing incidence of duodenal ulcers has been observed among women and decreasing among men, especially among younger men, in whom the incidence of H. pylori has decreased[8].

In the past, duodenal ulcers (DU) were thought to be more communal in males than in females. Currently, though, the incidence is probably equal in men and women. Death from duodenal ulcer perforation depends on the presence or absence of risk factors. Most studies have found around 10% of total mortality[9-10]. The high mortality and morbidity observed in cases of perforated duodenal ulcer (DU) in underdeveloped countries is probably due to late presentation[11]. Early repair of a perforated duodenal ulcer is safely recommended with minimal complications and no mortality. The surgeons selected the optimal surgical treatment for a perforated duodenal ulcer. Perforated duodenal ulcers (DU) are common surgical emergencies, but the literature does not have a definitive definition, incidence, complications, and treatment for major surgery[12-13].

This study was designed to evaluate duodenal ulcer in older patients by revealing the patient's health status, early and late repair, choice of surgical procedure, and differences between older and younger duodenal ulcer patients.

METHODS

This study was held in the Surgical Unit 2 of, Sheikh Zayed Medical College/ Hospital Rahim Yar Khan for two-year duration from January 2020 to December 2021. After obtaining the approval of the Ethical Committee, a retrospective study included 140 patients were alienated into 2 age groups as geriatric patients' group(A) and adult age group(B). Patients with perforation due to gastric cancer were omitted from the analysis. The patients were treated with perforation closure with pedicled omental patch repair and appropriate IV antibiotics were given post-operatively. Each patient was given standard postoperative care and discharged from the hospital if they had better mobility, good appetite and no fever. H. pylori therapy for its eradication with three-drug regimen was given for 1-week in all patients who underwent omental grafting. All cases were followed for 30 days postoperatively. Patients' age, gender, co-morbidities, use of anti-ulcer drugs, presence of HPI, use of NSAIDs, characteristic pain (severe epigastric pain or vague abdominal pain), symptoms duration, smoking was assessed at the presentation. The existence of H. pylori was confirmed on the basis of perioperative biopsies. Giemsa staining was used to identify H. pylori in pathological samples. The conditions that can affect pre- and post-operative results, like characteristics of pain (vague abdominal pain or typical sudden severe upper abdominal pain), the length of pre-operative hospital stay, total hospital stay, postoperative mortality and morbidity rates and American Society of Anaesthesiology (ASA) scores were also evaluated.

SPSS 22.0 was applied for statical analysis and data collection. The Chi-square tests and Manne-Whitney U were used for comparisons of groups when suitable. To assess age as an independent factor in mortality and morbidity; multivariate logistic regression analysis was performed. P <0.05 was taken as significant.

RESULTS

140 patients were registered in the analysis. Group I (n = 70) consisted of geriatric patients (age> 65) and Group-II (n = 70) adults' patients (age <65). The comorbidities and demographic parameters of patients are presented in Table-I.

Table-1: shows the clinical features and demographic profile of patients

	Group I (70)	Group II (70)	P-value
Age Sex: female/male	72.53 ±12.65 25/70	61.54 ± 3.75 28/70	 0.130
NSAID	20 (28.6)	18 (25.7)	0.030
Presence of HPI	55 (78.6)	50 (71.4)	0.002
Comorbidities CAD	 8 (11.1)	 5 (7.1)	 0.035
COPD	14 (20)	4 (5.7)	0.250
DM	18 (25.7)	6 (8.6)	0.390
HTN	30 (42.8)	29 (41.4)	0.002
CRI	4 (5.7)	2 (2.8)	0.480
Smoking status	31 (44.2)	26 (37.1)	0.176
CHF	2 (2.8)	1 (1.4)	0.078
Duration of preoperative hospitalization (h)	2.68 ±1.41	1.49 ± 0.19	0.719
Duration of symptoms (d) Epigastric pain	1.21± 0.39 65 (92.8)	1.42± 0.62 53 (75.7)	0.001 0.001
Proton pump inhibitor	10 (14.3)	4 (5.7)	0.496
Antiulcer drug	18 (25.7)	6 (8.6)	
H2 blockers	7 (10)	2 (2.8)	
ASA I	 50 (71.5)	 33 (47.1)	
II	10 (14.3)	0	
III	5 (7.1)	0	
IV	3 (4.2)	4(5.7)	0.002
V	2 (2.8)	1 (1.4)	

In group II; the eldest patient was 85 years old, and in group I; the youngest patient was 28 years of age. Despite being male dominance, no statistically substantial variance among both groups in relation of gender distribution was noted. In both groups, the most common comorbidities were diabetes (25.7% and 8.6%, respectively) and arterial hypertension (42.8% and 41.4%, respectively), hypertension (p = 0.002) and coronary artery disease (p = 0.035) was much high in group I. There are noteworthy differences among elderly and adults in prescribing HPI and NSAIDs. Group-I have higher frequency of smoking with no statical difference among the two groups. Preoperative outcomes counting pre-operative symptoms duration, pain characteristics, length of hospitalization preoperatively (time essential for preoperative evaluation and diagnosis, in hours), ASA scores, usage of antiulcer drugs, and the HPI existence are presented in Table-I. The symptoms duration before hospitalization was briefer in group-I in comparison to group-II (p = 0.001), the hospitalization duration preoperatively was comparable. Group II (92.8%) has more frequent vague abdominal pain than in group I (75.7%). There was substantial difference among the groups in the use of anti-ulcer drugs. While group II (p = 0.001) has high ASA scores in comparison to group I, HPI was least common in the group of elderly patients (p = 0.001). The results of the operation, including the type of operation and the duration of the operation, are presented in Table 2.

Table-2: shows the Operative outcomes

	Group I (70)	Group II (70)	P-value
Simple closure without omental patch	8 (11.4)	5 (7.2)	
Simple closure with omental patch	62 (88.6)	65 (92.8)	
Definitive	5 (7.)	1 (3.4)	
Antrectomy + gastrojejunostomy Antrectomy + gastroduodenostomy	2 (2.8) 1 (1.4) 2 (2.8)	(1.4) 0 0	 0.179
Subtotal gastrectomy + gastrojejunostomy			
Operative time (min)	50.10 ± 28.62	56.31± 20.81	0.010

The Dindoe-Clavien classification was used for the calculation of complications of surgery stated as Grades I-V and elderly patients have high surgery related complications. The outcomes evaluated postoperatively, counting total length of stay, mortality and morbidity are given in Table-III. Total hospital stay was briefer in 1st group (p = 0.001) in comparison to 2nd group. Except for the wound complications, which were higher in Group II, morbidity was comparable in both groups (p = 0.05). Complications of the pulmonary and urinary systems were more common in elderly patients, but no significant variance was noted among the two-groups. 9.3% (n = 13) was the overall mortality, group I has more mortality rates than group II (p = 0.006).

Table-3: shows the Postoperative outcomes

Characteristic	Group I (70)	Group II (70)	P-value
Total time of hospitalization	5.86± 0.98	5.88± 1.49	0.001
Morbidity Pulmonary complications	 8 (11.4)	 3 (4.3)	 0.290
Wound problems	7 (10)	2 (2.8)	0.05
Urinary infection	6 (8.6)	2 (2.8)	0.852
Dindoe-Clavien grade I	 26 (37.1)	 38 (55.3)	
II	34 (48.6)	19 (18.6)	
III a/b	2 (2.8)	4 (5.7)	
IV a/b	3 (4.3)	6 (8.6)	
V	5 (7.1)	3 (4.3)	0.017
Mortality	9 (12.9)	4 (5.7)	0.006

Table-4: shows operative time interval vs mortality

onset of perforation to operation time interval(hours)	Group I (70)	Group II (70)	Mortality
Less than 24 hours	52	55	0
24-48 hours	8	11	0
More than 48 hours	9	4	9.3%

DISCUSSION

Perforation as a complication of PUD is one of the most common surgical emergencies requiring early treatment and hospitalization[14-15]. In our study; the mean age of the patients is 46.75 ± 14.05 years, it seems to be a middle-aged disease. Similarly, Ohene-Yeboah reported an average age of 64.8 years in his study. While Etonyeaku et al. noticed it; It appears to be a disease of middle and young age with an average age of 39.7 years. In this study, men constituted the majority (62.1%); This is explained by the large difference in customs, social, economic and cultural activity between the two sexes. Similarly, Unar et al. reported that PU was 60.0% in male patients[16-17]. Bin-Taleb et al. We give the ratio of women to men 1: 8, we report the ratio of 1: 2. The dominance of men in our study may be due to the fact that men smoke more than women and experience more stress and tension with their lifestyle. More than three-quarters of PU patients were smokers, and many studies show a strong association between smoking and the occurrence of PU (cigarette smoking is known to adversely affect protective and aggressive factors on the mucosa)[18]. The most common comorbidities were diabetes (25.7% and 8.6%, respectively) and arterial hypertension (42.8% and 41.4%, respectively), hypertension (p = 0.002) and CAD (p = 0.035) was much high in group I. All the patients in our study generally describe a sudden and severe epigastric pain on admission, this pain being localized early on and then spreading rapidly to the abdomen[19]. In a study by Lau et al; showed that patients usually present with severe, sudden upper abdominal pain that is localized initially and then spreading rapidly[20-21]. It is

sometimes associated with symptoms of hypotension secondary to blood loss or systemic inflammatory response syndrome (SIRS).

In this study, death occurred in 13 patients which was quite an acceptable mortality rate compared to other literature data[22]. Most of the patients died in the first week after surgery, on average after 4 days. Solonirina et al. The 30-day mortality reported in the Hemmer study ranged from 4% to 31%, while the overall mortality was 9.49%. The most common complications reported by many authors are those related to wounds and pulmonary complications. Vinod et al. The wound infection was the most communal complication postoperatively (42.1%), trailed by pulmonary complications (32.5%)[23]. Kadz et al. Surgical site infection is the main problem in an 18% study. The outcome of the surgical procedure depends on the patient's individual reporting to the emergency room. Length of hospital stay and developing complications were the main factors influencing the outcome of surgery analyzed in many previous studies[24]. Late patient reports were associated with prolonged morbidity and even postoperative mortality.

It was statistically significant with respect to mortality and estimated time / hour from abdominal pain onset to surgery. In patients with onset of perforation during surgery <48 hours, there was no mortality, and all 13 deaths occurred> 48 hours apart. Considering the relationship between the length of hospital stay and the onset of perforation during surgery, the average hospital stay is 48 hours. It is statistically significant that the longer the time interval, the longer the hospital stay. The test was performed with a chi-square test with a p value of 0.039, postoperative complications were higher in patients admitted to hospital 72 hours after onset, and mortality was also higher in these patients[25].

CONCLUSION

In summary, duodenal ulcer perforation is a serious condition that requires urgent surgical intervention, especially in geriatric patients. The duodenal ulcer perforation surgery is likely to continue to be a challenge, especially in the elderly population, due to increased morbidity and mortality. The duodenal ulcer perforation remains one of the most common surgical emergencies, and the associated morbidity remains high despite advances in treatment, especially in developing countries. We come to the conclusion that the sooner the duodenal ulcer perforation is admitted to the emergency department, the better the result. Patients at high risk of perforation should be diagnosed for immediate diagnosis and treatment upon arrival in the hospital.

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