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Comparative study on the incidence of gastric and duodenal perforation presenting at RIMS, Ranchi, Jharkhand

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Abstract

Peptic perforations are one of the commonest complications of peptic ulcer disease. They constitute a vast majority of acute abdomen presenting in surgical emergencies. It is indeed one of the most dreadful catastrophes of peptic ulcer. Out of all the complications of peptic ulcer, acute perforation appears to be the commonest in our country. This was a prospective study of patients with peptic perforation admitted in The Department of Surgery, RIMS, Ranchi, Jharkhand, India during October 2015-October 2017. Peptic perforation is said to be common in 3rd, 4th, 5th decade of life, in males than females. It is very rare in children. Peptic ulcer disease constitutes of Gastric ulcer and Duodenal ulcer. These are considered as a single entity but when looked upon individually, both have different identity. Most of the feature are common but variations are present. Despite recent improvements in the management of peptic ulcers and its perforations, duodenal perforation and gastric perforations carries a definite morbidity and mortality rates which vary from 3%-10% as determined by different workers. The recent contradictory reports in the current world literature regarding incidence of gastric and duodenal perforations, incidence of age, male female ratio, types of managements, rare causes and factors influencing the outcome has drawn the attention towards the need for this study. Most of the patients had duodenal perforation and were males. The mortality was high in gastric perforation (23.4%). On basis pf histopathological report all the duodenal perforations were due to acute inflammatory lesions but in gastric perforation 8.51% were due to adenocarcinoma and 10.64% were due to fungal elements (Candida albicans).

Keywords: Gastric perforation, duodenal perforation, adenocarcinoma, candida albicans, mortality

Introduction

Peptic ulcer disease affects more than 4 million people around the world every year[1]. Complications are encountered in 10%-20% of peptic ulcers of which 2%-10% perforate[2,3]. Peptic ulcer perforations are one of the commonest complications of peptic ulcer and they constitute a vast majority of acute abdomen coming to the

surgical emergency in a hospital. It is indeed one of the most dreadful catastrophes of peptic ulcer. Out of all the complications of peptic ulcer, acute perforation appears to be the commonest in our country. Persistent ulcer leads to peptic ulcer perforations. There are certain risk factors (damaging or aggressive) which lead to perforation. These are: Use of NSAIDs, alcohol, tobacco, steroids, Cigarette smoking, *H. pylori* infections, Major burns- curling ulcer, Stress and anxiety, Immunosuppression, Multiple organ failure. Peptic perforation is said to be common in 3rd, 4th, 5th decade of life, in males than females. It is very rare in children.

Clinical features of perforation are dramatic. Majority of the patients give previous history of vague pain in the upper abdomen, dyspepsia. Once the perforation has set in, the gastric and the duodenal contents escape through the perforation into the peritoneal cavity. This provokes a widespread peritoneal irritation called “peritonism. Peptic ulcer disease constitutes of Gastric ulcer and Duodenal ulcer. These are considered as a single entity but when looked upon individually, both have different identity. Most of the feature are common but variations are present.

The incidence of duodenal ulcer perforation is higher than gastric ulcer perforation. Mortality rate is greater for gastric ulcer perforation than duodenal ulcer perforation (10%-40%)[4]. Time lapse between perforation and treatment is of crucial importance. Surgical intervention within 6 hours of perforation carries a very low mortality which rises steeply as duration extends beyond 12 hours. Many small perforations, on favourable occasions get sealed off spontaneously while perforations of large size do not often seal itself. Multiple perforations although rare carry a grave prognosis.

90% of duodenal perforations are situated anteriorly on the first part of duodenum, 5%-10% on the posterior wall whereas 60% of gastric ulcer perforations are situated anteriorly on lesser curvature while 39% are all over the stomach, rest 1% on the posterior wall. Gastric perforations carries worse prognosis than duodenal perforation[5].

The association of haemorrhage, haematemesis, or malena with perforation is not so common but greatly increases the mortality and morbidity rate of this disease.

Though toileting of the peritoneal cavity is an important step of operation and if incompletely done, may greatly influence the outcome of the disease by giving rise to residual abscess, adhesion formation and their resultant pathology.

The following methods of treatment have been advocated:

1. Conservative treatment by repeated nasogastric aspiration, resuscitation with fluid and electrolytes, suitable antibiotics, and assessing the case by repeated clinical and X-ray examination.
2. Immediate laparotomy with repair of perforation with omental patch.
3. Laparoscopic repair of perforation.
4. Definitive operation as vagotomy with drainage procedures, partial gastrectomy or others.

Despite recent improvements in the management of peptic ulcers and its perforations, duodenal perforation and gastric perforations carries a definite morbidity and mortality rates which vary from 3%-10% as determined by different workers.

The recent contradictory reports in the current world literature regarding incidence of gastric and duodenal perforations, incidence of age, male female ratio, types of managements, rare causes and factors influencing the outcome has drawn the attention towards the need for this study.

Aims and objectives

1. To evaluate and compare the incidence of gastric and duodenal perforations.

2. To evaluate and compare the causes of gastric and duodenal perforations.

Materials and Methods

This was a retrospective comparative study which included 153 patients who were admitted and treated in the Department of General Surgery at Rajendra Institute of Medical Sciences, Ranchi for the management of peptic perforation peritonitis between october 2015 and October 2017. Prior clearance was taken from Institutional Ethical Committee. Inclusion criteria were patients presenting with features of perforation peritonitis having peptic perforation. The exclusion criteria was - (1) patients having sealed peptic perforation (no apparent perforation seen) detected during operation and patients having traumatic upper gastrointestinal perforations. (2) Diagnosed case of peptic perforation not giving consent. A detailed clinical history was taken with pre defined proforma. The necessary investigations were done. Exploratory laparotomy was performed on study patients, site of perforation was determined, tissue biopsy from the edge of rent was taken. Tissue was sent for histopathological examination. Peritoneal fluid was aspirated and sent for culture and sensitivity Modified Graham's patch repair was done. Post operative monitoring was done.

Observation/Result

The following observations were made during the study:-

Table No-A: Annual Incidence

Year	Percentage of peptic Perforation
2012	57.60%
2013	58.02%
2014	46.60%
2015	44.32%
2016	39.10%
2017 Jan-Oct	35.66%

The annual incidence was 35.66%. incidence of peptic perforation peritonitis has decrease in recent past.

Table No. 1: Incidence of Gastric and Duodenal Perforation

Site Of Perforation	No. Of Cases (n=153)	Percentage
Gastric Perforation	47	30.72
Duodenal Perforation	106	69.28

Most of the perforations were duodenal perforations with ratio of duodenal perforation: gastric perforation 2.26

Table No-2: Age Incidence

Age In Years	No. Of D.U Perforation (n=106)	Percentage of Duodenal Perforation	No. Of Gastric Perforation (n=47)	Percentage of Gastric Perforation
0 – 10	0	0	0	0
11 – 20	9	8.49	2	4.26
21 – 30	14	13.21	4	8.51
31 – 40	39	36.79	8	17.02
41 – 50	27	25.47	17	36.17
51 – 60	11	10.38	11	23.4
61 – 70	4	3.77	2	4.26
71 – 80	2	1.89	3	6.38

Duodenal perforation was more common in age group 31-40 years where as Gastric perforation was more common in elderly (41-50 years).

Table No.3: Ethnicity

Ethnicity	No. Of Duodenal Perforation (n=106)	Percentage of Duodenal Perforation	No. Of Gastric Perforation (n=47)	Percentage of Gastric Perforation
Tribal	21	19.81	7	14.9
Non-Tribal	85	80.19	40	85.1

Majority of the patients admitted were Non Tribal's,(80.19% in duodenal ulcer perforation and 85.1% in gastric ulcer perforation) in this tribal dominated region.

Table No-4: Sex Incidence

Sex	No. Of Duodenal Perforation (n=106)	Percentage of Duodenal Perforation	No. Of Gastric Perforation (n=47)	Percentage of Gastric Perforation
Male	86	81.13	41	87.23
Female	20	18.87	6	12.77

Most of the cases were males in both gastric and duodenal perforations. Male to Female ratio in duodenal ulcer perforation 4.3:1. Male to Female ratio in gastric ulcer perforation 6.8:1

Table No-5: Occupation

Occupation	No. Of Duodenal Perforation (n=106)	Percentage of Duodenal Perforation	No. Of Gastric Perforation (n=47)	Percentage of Gastric Perforation
Hard Manual Labourer	52	49.06	23	48.94
Sedentary Worker	34	32.08	15	31.91
Skilled Worker	20	18.86	9	19.15

Maximum cases (D.U.P 49.06%, G.U.P 48.94%) belonged to hard manual labourer . skilled workers were less affected.

Table No-6: Socioeconomic Status

Low socio-economic status patients had a higher incidence rate as compared to middle and high economic status respectively. (D.U.P 66.04%, G.U.P 61.7%)

Socio Economic Status	No. Of Duodenal Perforation (n=106)	Percentage of Duodenal Perforation	No. Of Gastric Perforation (n=47)	Percentage of Gastric Perforation
Low	70	66.04	29	61.7
Middle	28	26.42	11	23.4
High	8	7.54	7	14.9

Table No-7: Dietary Habit

Dietary Habits	No. Of Duodenal Perforation (n=106)	Percentage of Duodenal Perforation	No. Of Gastric Perforation (n=47)	Percentage of Gastric Perforation
Vegetarian	14	13.21	6	12.77
Non-Vegetarian	92	86.79	41	87.23

Non-vegetarians have a higher incidence as compared to vegetarians.

Table No-8: Addiction

Addiction	No. Of Duodenal Perforation (n=106)	Percentage of Duodenal Perforation	No. Of Gastric Perforation (n=47)	Percentage of Gastric Perforation
Smoking	24	22.64	7	14.89
Tobacco	14	13.21	13	27.66
Alcohol	14	13.21	4	8.51
More than one addiction	42	39.62	19	40.43
No Addiction	12	11.32	4	8.51

Maximum cases had more than one addiction (D.U.P 39.62%, G.U.P 40.43%), which was followed by smokers (22.64%) in D.U.P and tobacco chewing (27.66%) in G.U.P.

Table No-9: Duration of Acute Abdomen At Time Of Admission

Duration in Hours	No. Of Duodenal Perforation (n=106)	Percentage of Duodenal Perforation	No. Of Gastric Perforation (n=47)	Percentage of Gastric Perforation
0 – 6	2	1.89	2	4.26
7 – 12	6	5.66	3	6.37
13 – 24	7	6.6	5	10.66
25 – 36	18	16.98	8	17.01
37 – 48	24	22.64	15	31.9
49 – 60	16	15.1	7	14.88
61 – 72	18	16.98	5	10.66
72 - onwards	15	14.15	2	4.26

Majority of the patients presented between 37-42 hours. D.U.P 22.64%, G.U.P 31.9% .Very few patients presented within 6 hours.

Table No-10: Associated Co-Morbidity

Co-morbid condition	No. Of Duodenal Perforation (n=106)	Percentage of Duodenal Perforation	No. Of Gastric Perforation (n=47)	Percentage of Gastric Perforation
Peptic ulcer	18	16.98	7	14.89
Diabetes mellitus	5	4.72	3	6.38
Tuberculosis	0	0	1	2.14
Hypertension	12	11.32	5	10.64
More than one condition	16	15.09	11	23.4
asymptomatic/no history	55	51.89	20	42.55

Associated co-morbidity of more than one condition was more in gastric perforation (23.4%). History of peptic ulcer disease was more common in duodenal perforation (16.98%).

Table No-11: Drug History

Drug History	No. Of Duodenal Perforation (n=106)	Percentage of Duodenal Perforation	No. Of Gastric Perforation (n=47)	Percentage of Gastric Perforation
NSAIDs				
Chronic	39	36.79	18	38.29
Occasional	17	16.04	8	17.02
Steroids	5	4.72	2	4.26
Antimalarial	18	16.98	5	10.64
Antitubercular	1	0.94	1	2.13
No history of drug intake	26	24.53	13	27.66

Maximum cases had history of NSAIDs intake in both duodenal and gastric perforation**.**

Table No-12: Dehydration/ Shock

Patient's Condition	No. Of Duodenal Perforation (n=106)	Percentage of Duodenal Perforation	No. Of Gastric Perforation (n=47)	Percentage of Gastric Perforation
No Dehydration	15	14.15	6	12.77
Mild Dehydration	18	16.99	5	10.64
Moderate Dehydration	22	20.75	8	17.02
Severe Dehydration	32	30.19	17	36.17
Shock	19	17.92	11	23.4

Features of severe dehydration and shock were more in patients of gastric perforation at time of admission than that of duodenal perforation. G.U.P severe dehydration 36.17%, shock 23.4%, D.U.P severe dehydration 30.19%, shock 17.92%

Table No-13: Gas under Diaphragm

Free gas under diaphragm	No. Of Duodenal Perforation (n=106)	Percentage of Duodenal Perforation	No. Of Gastric Perforation (n=47)	Percentage of Gastric Perforation
Present	103	97.17	46	97.87
Absent	3	2.83	1	2.13

Table No-14: Size of Perforation

Size Of Perforation	No. Of Duodenal Perforation (n=106)	Percentage of Duodenal Perforation	No. Of Gastric Perforation (n=47)	Percentage of Gastric Perforation
< 2 mm	27	25.47	9	19.15
2 mm - 5 mm	67	63.21	11	23.4
6 mm - 10 mm	7	6.6	24	51.06
> 10 mm	5	4.72	3	6.39

Most of the patients of gastric perforation had rent size between 6-10mm (51.06%) where as in duodenal perforation maximum patients had smaller size of rent 2-5mm (63.21%)

Table No-15: HPE Report

H.P.E REPORT	No. Of Duodenal Perforation (n=106)	Percentage of Duodenal Perforation	No. Of Gastric Perforation (n=47)	Percentage of Gastric Perforation
Acute Inflammatory Lesion	106	100	38	80.85
Malignancy (Adenocarcinoma)	0	0	4	8.51
Acute Inflammatory Lesion with fungal elements (Candida albicans)	0	0	5	10.64

Incidence of malignancy was seen in 8.51% of gastric perforation on histo-pathological report of biopsy taken from the edge.

Fungal element was seen in 10.64% of cases of gastric perforations.

All cases of duodenal perforations had acute inflammatory lesions on histo-pathological reports.

Table No-16: Mortality Rate

Post operative Outcome	No. Of Duodenal Perforation (n=106)	Percentage of Duodenal Perforation	No. Of Gastric Perforation (n=47)	Percentage of Gastric Perforation
Alive	88	83.02	36	76.6
Death	18	16.98	11	23.4

Mortality was more in gastric perforation (23.4%) as compared to duodenal perforation (16.98%).

Table No-17: Age Related Mortality

Age In Years	No. Of D.U Perforation (n=18)	Percentage of Duodenal Perforation	No. Of Gastric Perforation (n=11)	Percentage of Gastric Perforation
0 – 10	0	0	0	0
11 – 20	1	5.56	0	0
21 – 30	2	11.11	1	9.09
31 – 40	2	11.11	2	18.18
41 – 50	3	16.67	2	18.18
51 – 60	5	27.78	3	45.45
61 – 70	4	22.22	1	9.09
71 – 80	1	5.56	2	18.18

As age advances mortality increases in duodenal perforations but mortality in gastric perforation is somewhat constant.

Table No-18: Causes of Death

Cause	No. Of Duodenal Perforation (n=18)	Percentage of Duodenal Perforation	No. Of Gastric Perforation (n=11)	Percentage of Gastric Perforation
Septic peritonitis	7	38.88	3	27.27
Shock	5	27.77	3	27.27
Leakage	1	5.56	2	18.18
Aspiration Pneumonia	2	11.11	0	0
Renal failure	1	5.56	2	18.18
Medical illness	2	11.11	1	9.1

Most common cause of death in duodenal perforation was due to septic peritonitis (38.88%) but in gastric perforation shock and peritonitis were seen to be the most common cause of death (27.27%).

Discussion

The total number of cases of peritonitis of different etiology admitted in our surgical emergency during the time period was 429. Out of which 153 cases were of peptic ulcer perforation peritonitis. Thus the incidence of peptic ulcer perforation in our study was 35.66 %. Sharma et al (1981) found that the most common cause of peritonitis was peptic ulcer perforation[6]. Bhale rao (1983) found 32.9% cases of peptic ulcer perforation[7]. Rajendra singh Jhobta, et al (2006) reported that most common cause of surgical emergency in India is peptic perforation peritonitis[8]. Rajandeep Singh Bali, et al (2014) reported 45 % cases and commonest cause of peritonitis[9].Thus the findings in the present series are in fair agreement with findings of the above workers.

As per our hospital records the cases of peptic ulcer perforations in 2012 was 57.6%, in 2013 was 58.02%, in 2014 was 46.6%, in 2015 was 44.32%, in 2016 was 39.1% and during the study period was 35.66%. Thus it is seen that the annual incidence of peptic ulcer perforation has decreased. Svanes C (2000) reported a decrease in the incidence of peptic perforation by 4-11% annually over the last decade[10].Hermansson M et al (2009) suggested that incidence of peptic perforation has fallen considerably in recent years[11]. Thus the finding in the present study coincides with the findings of the above workers.

Most common site of perforation was in 1st part of the duodenum (69.28%). Gastric perforation was 30.72%. All perforations were anterior in position. Duodenal perforation was more than gastric perforation but the incidence of gastric has increased. Cherian J V, et al (2010) reported that incidence of duodenal perforation is more common but there is rise in incidence of gastric perforation in Indian sub-continent[12]. Wysocki A, Budzynski P, Kulawik J et al (2011) reported that previously predominated duodenal perforation is now shifting to gastric perforation[13]. The findings of the present study coincide with findings of above workers.

The age incidence of peptic perforation showed a wide range. In duodenal perforation, the maximum age incidence occurred between 31-40 years (36.79%) followed by 41-50 years (25.47%). The minimum age recorded was 11 years and maximum was 76 years. In gastric perforation, the maximum age incidence occurred between 41-50 years (36.17%) followed by 51-60 years (23.4%). The minimum age of presentation was 12 years and maximum was 74 years.Thorsen K, Soreide JA, et al (2013) reported in their series that most of the peptic ulcer perforations irrespective of location occurred in middle age group between 30-50 years[14]. Sujit M Chakma, et al (2014) reported in their series that most of the patients of peptic perforation peritonitis were in between middle age group in North East India. Next were patients in between age group 55-65 years with more of gastric perforation in comparison to duodenal perforation[15].The findings of the present study are in fair agreement with the findings of the above workers.

Most of the patients admitted were non-tribal's for both duodenal and gastric perforations. Tribal patients were very few in number as compared to the tribal dominancy

in this geographical region. There was no reference found for peptic ulcer perforation in tribal population .

In the present study most patients were males in comparison to females. The male to female ratio in duodenal perforation was 4.3:1 and male to female ratio in gastric perforation was 6.8:1Wysochi A, et al (2011) reported that there was no difference in the sex incidence of duodenal and gastric perforations[13]. Ugochukwa A I, et al (2013) reported male predominance in peptic ulcer perforation, male to female ratio was 3.2:1[16]. Munikrishna P C, et al (2016) concluded that in their prospective study of peptic perforations most of the patients were male (96%)[17]. The finding of the present study coincides with that of the above workers.

Hard manual and unskilled labours mostly belonging to low socio-economic group were the maximum patients effected by peptic perforation (D.U.P 49.06%, G.U.P 48.94% for hard manual unskilled workers. D.U.P 66.04%, G.U.P 61.7% for low socio-economic status). Munikrishna P C, et al (2016) reported 66% of patients belonged to low socio-economic status and most were unskilled labours or dependents[17]. Magsi A M, et al (2017) reported that majority of patients were belonging to low socio-economic status[18]. The finding of the present series is in accordance with the findings of the above workers. There are certain risk factors, which are common to the low socio-economic status. In this region most of the low socio-economic population are hard manual and unskilled labours. They have irregular dietary habits both in relation to food consumption, availability and time of consumption. Addiction to alcohol, tobacco, smoking are found at large in this population. Abuse of painkillers is common in these people. Lack of education and awareness of symptoms and treatment are major cause of high incidence.

In the present study series, 86.79% of the duodenal perforation patients and 87.23% of the gastric perforation patients were non-vegetarian. Chauhan D, Mathur R, et al (2016) reported 82% of patients being non-vegetarian with 91.5% having history of oily and spicy food[19]. The high incidence of perforation among the non-vegetarians may be attributed to the association of non-vegetarians with high risk factors like smoking and tobacco. Non-vegetarian diet is usually spicy and spices have been known to be irritants of the gastric mucosa.

In the present study 39.62% of duodenal perforation and 40.43% of gastric perforation were found to have addiction to more than one substance mainly the combination of smoking, alcohol, tobacco and betel nut. In duodenal perforation patients 22.64% were addicted to smoking of tobacco. In gastric perforation patients 27.66%were having addiction to tobacco and betel nut chewing. Parikh S S, et al (1999) reported that tobacco chewing to be associated with majority of gastric ulcers and its complication. Tobacco had been found to have a high association with gastric mucosa erosion[20]. Atish Bansod, et al (2014) reported 55.71% of duodenal perforation patients having addiction to smoking tobacco[21]. In this region the abuse of tobacco in form of smoking cigarette or bidi or chewing alone or with betel nuts is very common. The finding of this series coincides with findings of the above workers.

Most of the patients presented in between 37-48 hours in both duodenal and gastric perforations (22.64%, 31.9%). Maximum patients reached the hospital within 48 hours. Less than 5% patients reported within 6 hours. Sushma Surapaneni, et al (2013) reported that most patients in southern India had reached the hospital within 12 hours[22]. Ugochukwi A J, et al (2013) reported that 51.3% patients reach the health care centre within 24 to 48 hours[16]. The delay in our series can be attributed to the availability of

vehicle, distance to our hospital from the rural areas from where most patients come. Most patients take home remedies for discomfort, visit local health workers and wait for discomfort to subside. The idea of emergency surgical intervention is not appealing to most patients because of lack of awareness.

In our present series most of the patients who presented for duodenal perforation (51.89%) or gastric perforation (42.55%) had either no history of any co-morbid conditions or had no or vague symptoms of any co-morbid condition. Only few had history of peptic ulcer disease. (16.98% of duodenal perforation, 14.89% of gastric perforation) . Barksdale A R, et al (2000) reported that 50% of the patients of peptic perforation had history of associated peptic ulcer disease[23]. Kjetil Soride, Kenneth Thorsen, et al (2015) majority of the patients of peptic perforation have an association with peptic ulcer disease[14].

Peptic Perforation is commonly seen in low socio-economic group of people. They are not aware of the symptoms of peptic ulcer disease or any other co-morbid conditions such as Diabetes mellitus, hypertension. They remain reluctant or try to ignore it as far as possible in fear of lack of resources for treatment. Some do not recall any major symptoms due to lack of knowledge.

In our present study 52.83% of duodenal perforation and 55.31% of gastric perforation patients had prolonged or recent use of NSAIDs . History of antimalarial drugs, 16.98% and 10.64% was seen for duodenal and gastric perforation respectively. Hernandez-Diaz S, et al (2000) found that most patients who had peptic ulcer disease and its complications had high association with the use of NSAIDs[24]. Christensen S, et al (2007) found peptic perforation in most of the patients with NSAIDs abuse[25]. Finding of our series is similar to that of above workers. The NSAIDs are easily available and widely misused in this region. Even patients who suffer from peptic ulcer take these medications for pain relief. The use of antimalarial drug (chloroquine) was second most common taken drug. This region is endemic for malaria and chloroquine is used in almost all cases of malaria in rural and some urban areas. The adverse effect of chloroquine on gastrointestinal tract can be said to be responsible for perforation.

In the present study series, 30.19% of duodenal perforations patients were in state of severe dehydration followed by 17.92% in state of shock. In gastric perforation patients, 36.17% were in state of severe dehydration followed by 23.4% in state of shock.

We see majority of the patients are in the state of severe dehydration and shock for both duodenal and gastric perforations. Ugochuckwu A L,et al (2013) reported that most patients presented with severe dehydration and shock (75%). This was because of increased time duration between onset of symptoms and presentation at hospitals[16]. Dehydration in peptic perforation is due to internal as well as external loss of fluid, restriction of fluid intake. The high rate of severe dehydration in our series is due to late presentation of the patients at the surgical emergency.

Our study showed that more about 97% of the patients had free gas under the right hemi-diaphragm on x-ray of the abdomen (erect view). Barksdale A R, et al (2001) reported that more than 90% cases show free gas under diaphragm[23]. Elfaith Elnagib, et al (2008) also reported that 90% of patients in his series had free gas under diaphragm[26]. Finding of our study coincides with findings of the above workers.

In the present study 63.21% of duodenal perforation had rent size between 2-5mm where as 51.06% of gastric perforation had size of rent between 6-10mm. S Gupta, et al (2005) reported that most patients (25%) had perforation of size more than 1mm[27]. There were no

references available for variation in size of rents in gastric and duodenal perforation.

Biopsy were taken from the margins of the perforation for both duodenal and gastric perforations and were sent for histopathological examination. All the HPE reports of duodenal perforation showed acute inflammatory lesions. The reports of HPE of tissue from gastric perforations showed variations. 80.85% of reports showed acute inflammatory lesions. 8.51% had adenocarcinoma and 10.64% of reports showed fungal elements (hyphae). Stechnberg I, et al (1981) reported that malignancy in gastric perforation was upto 6%[28] . Lehnert T, et al (2000) reported that 10-16% of all gastric perforations are caused by gastric carcinoma[29]. Our study shows near resemblance to the studies mentioned above.

Fungal cause of perforation (Candida albicans) is a rare cause. Candida albicans is ubiquitous fungus present in healthy individuals and normal commensal of the gastro-intestinal tract. Candida infections generally develop when the host's immune response is compromised with malignant tumors, diabetes, patients on steroids, extreme of ages, malnurishment, or immune-suppressant drugs. Ears P, et al (1972) reported 4.35% of Candidal infection in gastric perforation[30]. Tsukamoto H, et al (1986) reported 5.9% incidence of candidal infection as a cause of gastric perforation[31]. Our study had patients who were diabetic, old age and malnourished teenager who were suffering from gastric perforation due to Candida albicans.

In our study, mortality rate for gastric perforation (23.4%) was higher than that of duodenal perforation (16.98%). Age related mortality was seen in elderly patients with maximum in age group 51-60 years. Mortality above age group 50 years was more in gastric perforation (74%) than duodenal perforation (55%). Most common cause of death was peritonitis and shock in post operative patients for both duodenal and gastric perforation. Kocer B, et al (2007) reported a mortality rate of 37.7% in age above 65 years[32]. Lau J Y, et al (2011) reported mortality in peptic perforation to be around 30%[33]. Buck D L, et al (2014) reported a mortality rate of 28% in elderly patients[34]. Sarcide K, Thorsen K, et al (2014) reported mortality rate from 20-30% as age advances[14]. Rajshekher Patif, et al (2015) reported a mortality rate of 44% on age group above 60 years[35]. The finding of this series is in accordance with the findings of the above workers.

Conclusion

The incidence of peptic ulcer perforation has decreased in the recent past due to development of antacids, proton pump inhibitors. But the condition still remains grave. Mortality is high is severe peritonitis. The awareness about the causes of peptic perforation is still lacking in the vast majority of the population. The fungal cause of perforation should be always considered in old and immunocompromised patients. The socio-economic relation of perforation in the low strata group is of concers. Lack of knowledge about the disease is prevalent at large. Much still has to be done to create awareness about the cause n severity of the disease.

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