A STUDY ON ENDOSCOPIC EVALUATION OF UPPER GASTROINTESTINAL BLEEDING

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ABSTRACT

CONTEXT

Upper gastrointestinal bleeding (UGIB) is one of the commonest gastrointestinal emergencies encountered by clinicians. Peptic ulcers are the most common cause of UGIB. Endoscopy has become the preferred method for diagnosis in patients with acute UGIB. This study is done in a diagnostic upper gastrointestinal endoscopy (UGIE) setup of a tertiary care hospital to ascertain the causes of UGIB prevalent in this part of our country which might differ from other studies.

AIM

To ascertain prevalent causes of UGIB in patients of this part of India admitted to a Govt. Tertiary Hospital with a provisional diagnosis of UGIB.

METHOD

One hundred consecutive patients with UGIB were subjected to UGIE to find out the aetiology. The clinical profile and endoscopic findings were analysed and compared with the data on UGIB from other studies.

RESULTS

The mean age of patients was 47.03 years with male: female ratio of 2.33:1. 58% of patients were first time bleeders. Majority of patients presented with melaena. Visualisation of active bleeding achieved to 85.7% when endoscopy was done within first 24 hrs. The commonest cause of UGIB was duodenal ulcer (DU) which accounted for 41% cases. Gastric ulcer was responsible in 13% of cases. Portal hypertension was responsible for bleed in only 13%. Neoplasms accounted for 25% of cases. Other less common causes were erosive gastritis (3%), gastric polyp (3%), Mallory-Weiss tear (1%), and Dieulafoy's lesion (1%). Among bleeding peptic ulcers, 27.8% of cases were classified as Forrest IIa and 20.4% in Forrest IIb & IIc each. Acid peptic disease was past history elicited in majority (33%) followed by NSAID (26%) and alcohol (26%).

CONCLUSION

The present study has diagnosed various causes of upper gastrointestinal bleeding in this part of country. The incidence of gastric carcinoma as a cause of upper gastrointestinal bleeding is significantly high compared to those in other studies. UGI endoscopy should be done in every case of upper gastrointestinal bleeding as early as possible to facilitate accurate diagnosis and plan out an appropriate therapeutic measure.

KEYWORDS

Upper Gastrointestinal Bleeding (UGIB), Upper Gastrointestinal Endoscopy (UGIE), Duodenal Ulcer (DU).

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INTRODUCTION: Upper gastrointestinal bleeding (UGIB) is the bleeding from any part of the gastrointestinal tract proximal to the duodenojejunal junction or the ligament of Treitz. It may manifest as haematemesis or melaena or both. The incidence of upper gastrointestinal bleeding is more common compared to lower gastrointestinal bleeding. Despite improvements in diagnosis and treatment modalities over the last few decades, an in-hospital mortality rate of 5% is still a matter of concern.[1,2]

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Peptic ulcers are the most common cause of UGIB, accounting for up to 50% of cases; an increasing proportion is due to nonsteroidal anti-inflammatory drugs (NSAIDs), with the prevalence of Helicobacter pylori decreasing.[3]

Endoscopy has become the preferred method for diagnosis in patients with acute upper GI bleeding. This method is informative in most patients, correctly identifying the site and source of bleeding in 90% of cases.[4] Few discoveries in medicine have contributed more to the practice of gastroenterology than the development of diagnostic and therapeutic endoscopy. Ability to take targeted mucosal biopsies remains a unique strength of endoscopy as compared to other radiological imaging studies. The present study was carried out to determine the aetiologic spectrum of UGIB in this part of coastal India and to compare it with the reported spectrum from other studies done globally.

METHOD: The study material consisted of the clinical and endoscopic data obtained from 100 consecutive patients with UGIB coming to the outpatient departments or indoor admissions in M. K. C. G. Medical College, Odisha over a period of two years i.e. 2013-2015. The data analysed included the detailed history of GI bleeding, alcoholism and NSAID use. All patients underwent thorough physical exam, and after initial haemodynamic stabilisation and routine investigations, were subjected to upper GI endoscopy to determine the aetiology.

Approval from the Ethical Committee of M. K. C. G. Medical College Hospital and HOD of Department of General Surgery was obtained. Each patient signed a consent form that the endoscopist has fully explained the nature and risk of the procedure. Pharyngeal anaesthesia was used during endoscopy by using 10% lignocaine spray into pharynx. Under direct vision of all structures passed through by endoscope, reporting was done.

Data was analysed using statistical mean, percentage. An extensive search from different journals and publications was done to analyse the causes of UGIB in different regions, and comparison was made between the present study and other studies on UGIB to evaluate the aetiological and clinical spectrum of bleeding in different geographical areas.

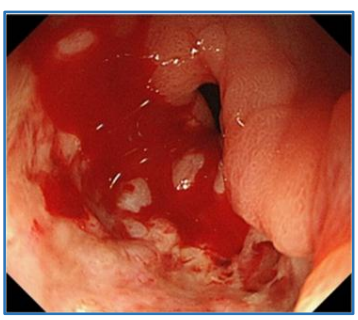

Fig. 1: Bleeding Gastric Ulcer

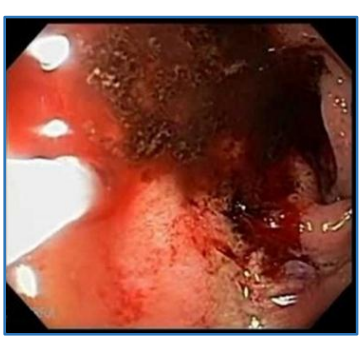

Fig. 2: Bleeding Duodenal Ulcer

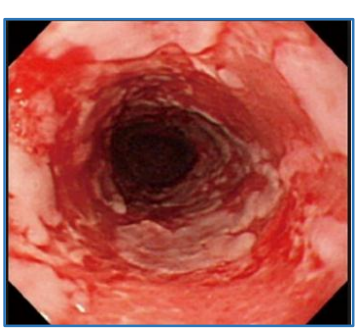

Fig. 3: Oesophageal Erosion

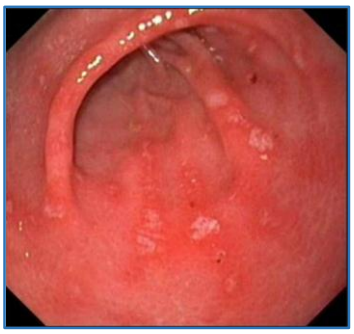

Fig. 4: Gastric Erosion

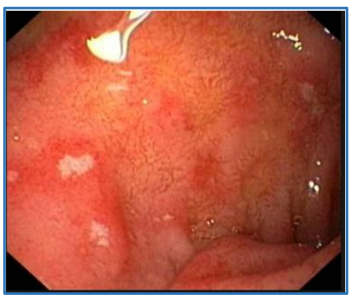

Fig. 5: Duodenal Erosion

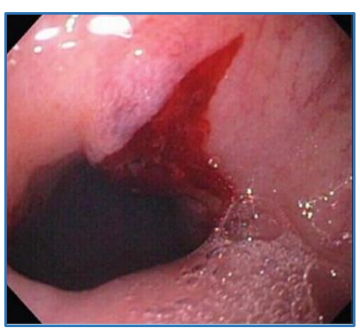

Fig. 6: Mallory Weiss Tear

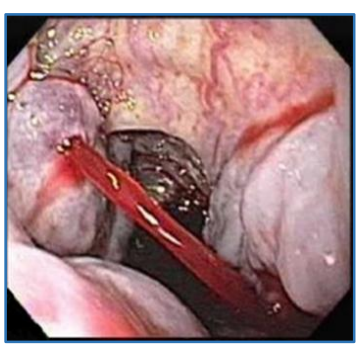

Fig. 7: Bleeding Oesophageal Varices

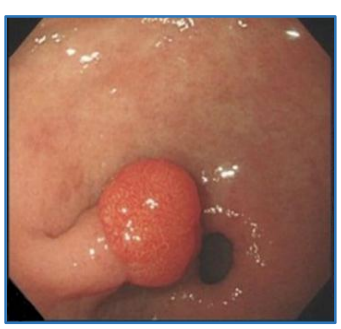

Fig. 8: Gastric Polyp

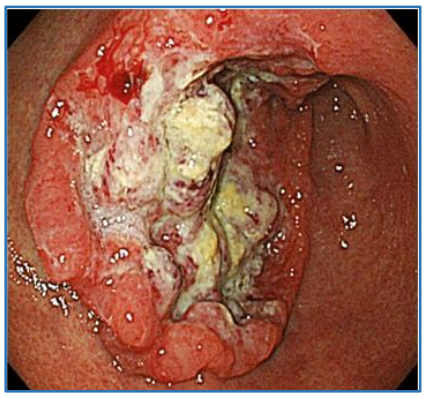

Fig. 9: Carcinoma Stomach

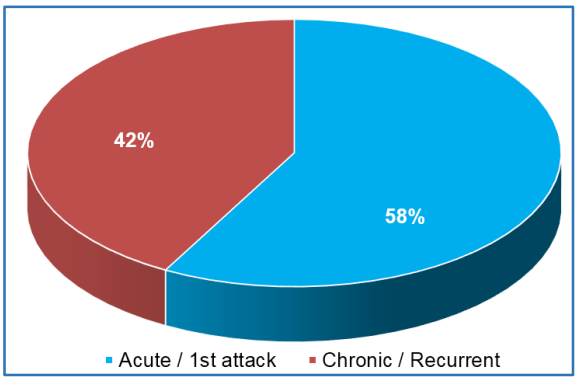

Chart 3: Nature of Bleeding/Number of Attacks

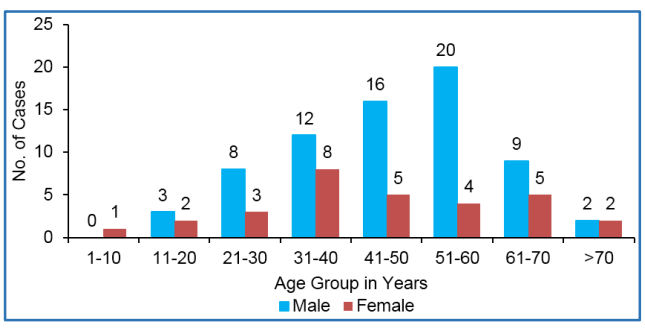

Chart 1: Age and sex incidence of upper gastrointestinal bleeding

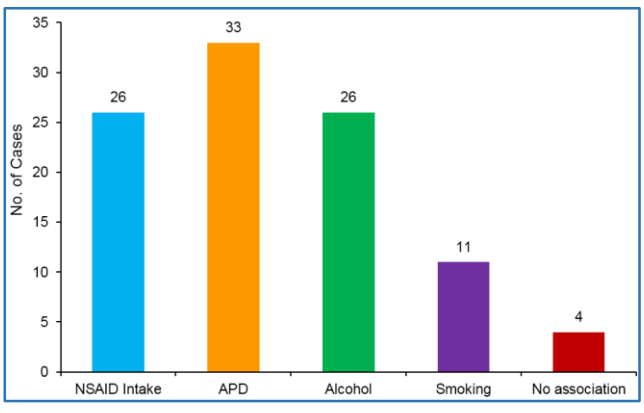

Chart 4: Different Past History related to Disease

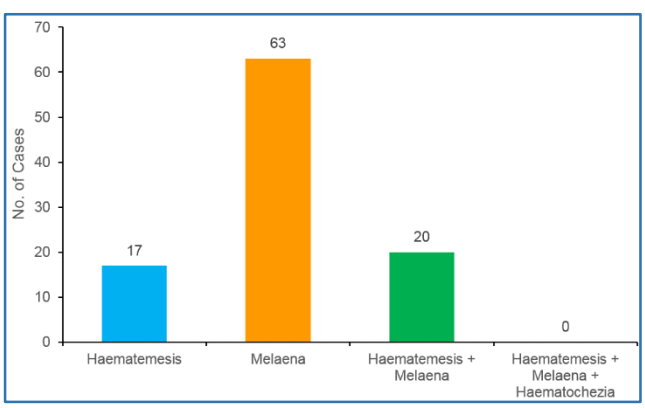

Chart 2: Clinical Presentation

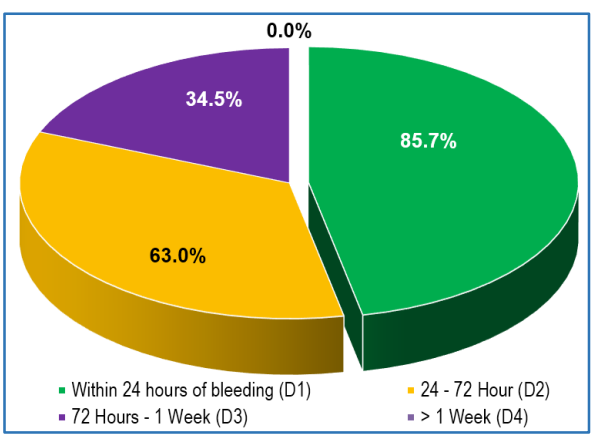

Chart 5: Timing of Endoscopy Vs Detection of bleeding points

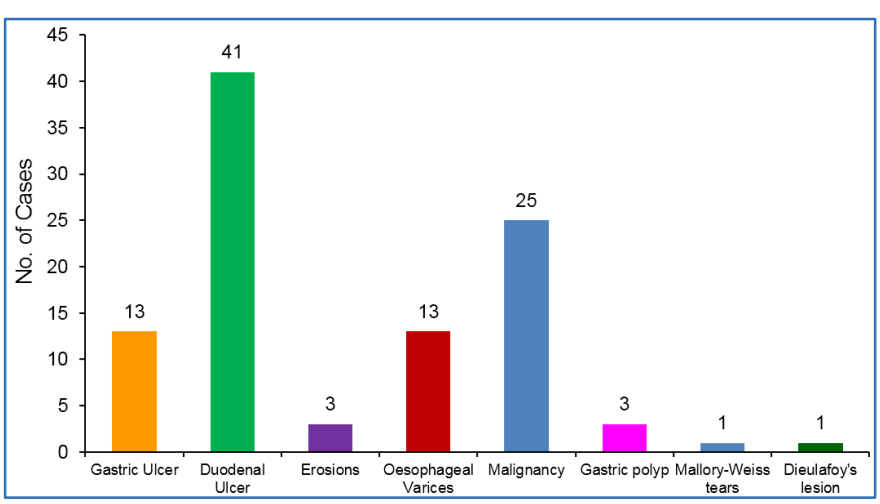

Chart 6: Endoscopic Diagnosis of Cases

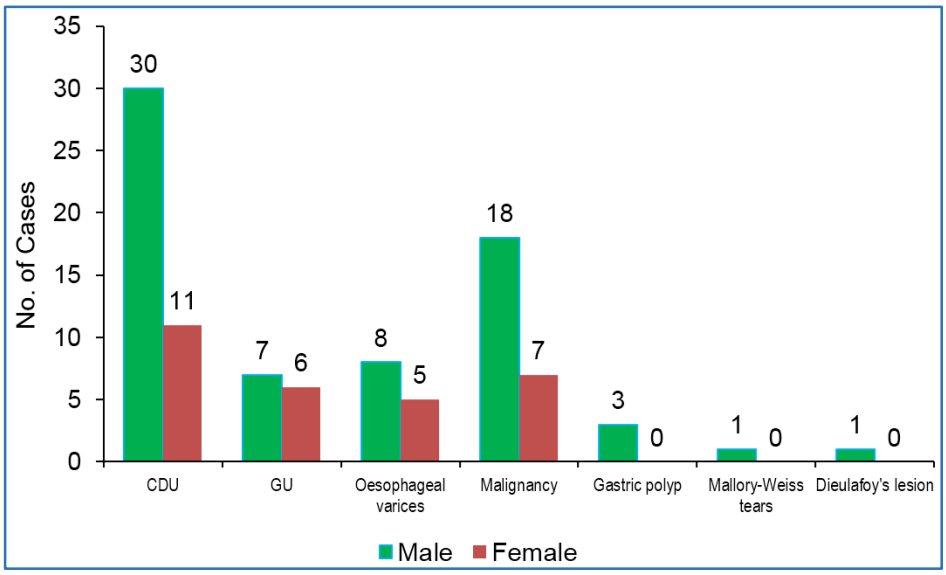

Chart 7: Sex Incidence of Upper GI Bleeding due to various causes

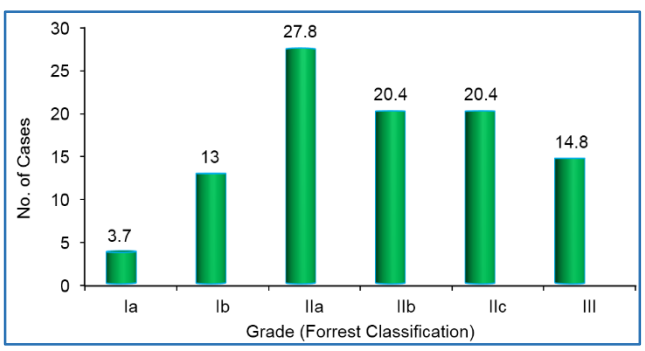

Chart 8: Bleeding Peptic Ulcers classified as per Forrest classification of stigmata of recent bleeding

OBSERVATIONS AND DISCUSSION: Observations were drawn from upper gastrointestinal endoscopic study of 100 successive patients from a period of 2013-2015 with a provisional diagnosis of upper gastrointestinal bleeding both in medical and surgical OPDs and wards.

Out of 100 numbers of consecutive cases, 70 were male and 30 were female. Male to female ratio was 2.33: 1. The present study confirms with study series of Kashyap R et al (2005)[5] with M: F ratio of 3.63:1 and Lakhani K et al (2008)[6] with M:F ratio of 2.44:1, Anand C. S et al(1988)[7]–3:1, Rathi P et al(2001)[8]-3.5:1. Reason for male preponderance in the study is due to the relative negligence of females among the rural and tribal people, which constitutes the major bulk of the population who depend on government hospitals. Also, many social taboos and prevailing superstitions in the conservative society of the state do prevent them to seek medical aids in hospitals; thus lowering the prevalence of females in hospitals. (Table 1).

The minimum age of the patients was 3 years and the maximum age was 81 years, with mean age of 47.03 years. This confirms our study with study series of Singh SP et al (2013)[9]-42.2 years, Lakhani K et al (2008)[6] and Kashyap R et al (2005)[5] having mean age of 42.44 years and 47.7 years respectively. Reason may be due to relative importance of this active population age group which needs cut shorting of their disease period in order to revert back to their activities of life; thus presenting themselves for treatment. Moreover people of this group because of their activities and stress and strains of life are prone for analgesic abuse, alcohol abuse and acid peptic disease. (Table 1).

Age group in Years	Male		Female		Total	
	No.	%	No.	%	No.	%
1-10	0	0	1	1	1	1
11-20	3	3	2	2	5	5
21-30	8	8	3	3	11	11
31-40	12	12	8	8	20	20
41-50	16	16	5	5	16	16
51-60	20	20	4	4	24	24
61-70	9	9	5	9	14	14
>70	2	2	2	2	4	4
Total	**70**	**70**	**30**	**30**	**100**	**100**

Table 1: Age and sex incidence of upper gastrointestinal bleeding

Maximum number of cases presented with melaena alone (63%) followed by haematemesis and melaena (20%) and haematemesis alone (17%). None of the cases presented with haematochezia and melaena. The present study is comparable with Kashyap R et al(2005)[5] having 71.2% cases presented with melaena but a study series by Lakhani K et al(2008)[6] had haematemesis as presenting feature in 55% of cases and melaena in 32% of cases. Above study of Lakhani K et al[6] concluded that oesophageal varices was the major aetiological factor and so more number of patients with haematemesis as presenting feature (Table 2).

Clinical presentation	No. of cases	Percentage
Haematemesis	17	17
Melaena	63	63
Haematemesis+Melaena	20	20
Haematemesis+Melaena + Haematochezia	0	0
Total	**100**	**100**

Table 2: Clinical presentation

58% of cases presented during first episode of their bleeding while 42% had a previous history of GI bleeding. Less number of recurrent bleeding cases found in this study may be due to first attack being adequately managed leaving negligible chances of recurrent bleed. Also change of dietary habits, abstaining from alcohol and NSAID abuses decreased re-bleeding. First attack leading to death or difficulty reaching hospital in time may have decreased number of patients having next episode. Still the number of recurrent cases is a concern owing to its number and need better management from the treating doctor who referred the case for diagnostic UGIE. (Table 3).

Nature of bleeding	No. of cases	Percentage
Acute/1st attack	58	58
Chronic/Recurrent	42	42
Total	**100**	**100**

Table 3: Nature of bleeding/number of attacks

Relevant past history was elicited from 96 patients. History suggestive of acid peptic diseases(33%) as the most common incriminating factor of upper GI bleeding followed by alcoholism and NSAID intake (26%). History of smoking comes up in the last i.e. (11%). This is comparable to study by Lakhani K et al(2008)[6] stating 25% cases had history of NSAID and alcohol each and with Kashyap R et al(2005)[5] showing 38.7% cases with NSAID history and alcohol addiction in 4.5% cases. But not with Kaviani MJ et al (2010)[10] stating 75% of cases having history of NSAID abuse and Singh SP et al(2013)[9]-7.56%. (Table 4).

Past History	No. of Cases	Percentage
NSAID Intake	26	26
APD	33	33
Alcohol	26	26
Smoking	11	11
No association	4	4
Total	**100**	**100**

Table 4: Different past history related to disease

In this study, when endoscopy was done within 24 hours of haemorrhage, 85.7% cases were diagnosed with active bleeding points. It decreased to 63% when endoscopy was performed beyond 24 hours & up to 72 hours post-haemorrhage. It further decreased to 34.5% when it was done within 1st week and after 72 hours post-haemorrhage. No bleeding points were detected when endoscopy was performed after one week post-haemorrhage. This is closer to study series of Weill J P et al (1975)[11] having 91.4% cases with active bleed in first 12 hours, Spiller R.C. et al (1983)[12] having 85%-95% cases in first 24 hours, Buccino R.V. et al (1990)[13] having 98.2% cases in first 12 hours, 57.2% cases with active bleed in 24-72 hours post-haemorrhage and Rossi R. et al (1998)[14] having 90-95% cases in first 12 hours. (Table 5).

Timing	No. Of Cases	Active Bleeding	Percentage
Within 24 hours of bleeding (D1)	35	30	85.7
24-72 Hours (D2)	27	17	63.0
72 Hours-1 Week (D3)	29	10	34.5
>1 Week (D4)	9	0	0

Table 5: Timing of Endoscopy vs. detection of bleeding points

Peptic ulcer found to be the major causes (54%) of upper gastrointestinal bleeding in this study. This confirms our study with Dolmans WM. et al (1983)[15]-40.9%, Kaviani MJ et al (2010)[10]-44%, Enestvedt BK et al (2000-2004)[16]-32.7% and lower than Webb WA et al (1981)[17]–74.9%.

Out of which, duodenal ulcer (41%) is ahead of gastric ulcer (13%) as a causing of bleeding. Present study attained a closer figure of incidence of CDU with study series like Singh SP et al (2013)[9]-57.6%, Kashyap R et al (2005)[5]-43.9%, Kelley HG et al (1963)[18]-56.6%, Puchner R et al (1995)[19]-41% but lower incidence than present study was found in study series like Kaviani MJ et al (2010)[10]-16%, Lakhani K et al(2008)[6]-14%, Enestvedt BK et al (2000-2004)[16]-37.1%, Anand C. S et al(1988)[7]-25 %, Akhtar AJ et al (2001)[20]-21%, Rathi P et al(2001)[8]-10.8%, Krishnakumar R et al (2007)[21] -9.8%, Gajendra O et al (2009)[22]- 17.5%.

All gastric ulcer cases (13% of total cases) had clots adherent/visible vessels to the base of the ulcers. This present study is comparable with Singh SP et al(2013)[9]-11.8%, Kashyap R et al (2005)[5] -17.1%, Gajendra O(2009)[22] -17.5%. But more than studies of Anand C.S. et al (1983)[7] –5%, Rathi P et al (2001)[8]-4.5%, Krishnakumar R et al (2007)[21] -8.1%. But less than studies of western world like Akhtar AJ (2001)[20] -24%, Kelley HG et al (1963)[18]-23%, Puchner R et al (1995)[19]-27%, Kaviani MJ et al (2010)[10]-30%, Enestvedt BK et al (2000 -2004)[16] having 54.4% incidence. The incidence of gastric ulcer is more in western series probably due to awareness in patients of their problem, better health insurance policy which makes endoscopic screening mandatory for all who are to be insured.

Malignancy is the 2nd leading cause with 25% of cases diagnosed by UGIE. In this series, 32% cases were confirmed to be neoplasm causing UGIB by endoscopic biopsy. Out of 32 cases, one case had previous attack of haematemesis & melaena in the past. At endoscopy, three cases had an exophytic growth at cardio-oesophageal junction extending towards 3 cm of lesser curvature. One case was found to be duodenal neoplasm. All the rest patients had ulcer or exophytic/ulcerative growth at antrum or prepyloric/body region. Clots were adherent to the base of the ulcer. Very high incidence of malignancy in the present study as compared to other studies like Singh SP et al (2013)[9]- 7.73%, Lakhani K et al(2008)[6]-9%, Kashyap R et al(2005)[5] –7.2% Kelley HG et al (1963)[18]-4%, Akhtar AJ et al (2001)[20]- 5.8%, Rathi P et al(2001)[8]–0.75%, Krishnakumar R et al (2007)[21]-2.4%, Gajendra O et al

(2009)[22]-2%. Multiple reasons may be given for this high incidence of malignancy like increased incidence of H. Pylori infections, increased smoking habit and consumption of salted and smoked food especially sea foods easily available in this region; moreover, more number of patients are referred from Primarily Health Care; also, due to regional and genetic variation in this part of the India.

Oesophageal varices accounted for 13% of cases. All the patients were managed conservatively. In study series comparison, Akhtar AJ et al (2001)[20]-15%, Singh SP et al (2013)[9]-12.83%, Kashyap R et al (2005)[5]–10.8%, Dolmans WM. et al (1983)[15]–16.4%, Kaviani MJ et al(2010)[10]–11% were confirmed with the present study. High incidence in some series as compared to the present series like Buccino R.V. et al (1990)[13]-72.3%, Lakhani K et al(2008)[6]–37%, Anand C.S. et al (1983)[7]–45.5%, Rathi P et al(2001)[8]-56%, Krishnakumar R et al (2007)[21]-33.3%, Gajendra O et al (2009)[22]-30.9%. Reason may be high number of portal hypertension cases referred to metropolitan cities for interventional measures. Secondly, majority of population of metropolitan cities have higher incidence of alcohol intake. But low incidences were seen in Holman RAE et al (1990)[23] -4%, Webb WA et al (1981)[17]–4.9%. This disparity might be due to more consciousness and availability of medical care in western countries so that before coming to a stage of variceal bleeding they get treated for their disease.

3% of cases had only gastric erosion causing UGIB. 6 cases had oesophageal erosions associated with some major pathology, 9% cases had duodenal erosions with associated major pathology as the culprit. This is closer to study series of Singh SP et al(2013)[9]–1.8%, Rathi P et al (2001)[8]-4%, Webb WA (1981)[17]–0.8%, but lower than other studies like Krishnakumar R et al (2007)[21]–43.6%, Lakhani K et al (2008)[6]-14%, Enestvedt BK et al (2000-2004)[16]-18.8%, Anand C.S. et al (1983)[7]–8.5%, Gajendra O et al (2009)[22]-13%, Kashyap R et al(2005)[5]–11.7%, Akhtar AJ et al (2001)[20]-20%, Dolmans WM(1983)[15]-7.4%. Reason may be due to different food habit or alcohol binge drinking or stressful life. The commonest cause of erosion in patients with haematemesis and melaena were NSAID misuse.

In the present study, 3% cases were found to be gastric polyp endoscopically which is lower than study series of Islam RS et al (2013)[24] with 6% cases with 10% chances of being malignant. One out of three cases turned out to be malignant in the present study. Two cases had PPI intake history for long duration which is an important aetiology.

In the present study, Mallory-Weiss tear accounted for 1% of cases which confirms with study of Singh SP et al (2013)[9]-1.8% but not with Webb WA et al (1981)[17]-9.8%, Puchner R et al (1995)[19]-9%, Akhtar AJ et al (2001)[20]-10%. In the present study, 1% cases were incidentally found to be Dieulafoy's lesion which is comparable with Akhtar AJ et al (2001)[20]-5% cases (Table 6 & 6-A).

Source	Incidence	Percentage
Peptic Ulcer	54	54
Gastric Ulcer	13	13
Duodenal Ulcer	41	41
Erosions	3	3
Oesophageal Varices	13	13
Malignancy	25	25
Gastric polyp	3	3
Mallory-Weiss tears	1	1
Dieulafoy's lesion	1	1
Total	**100**	**100**

Table 6: Endoscopic diagnosis of cases

	Anand CS et al[7]	Rathi P et al[8]	Krishnakumar R et al[21]	Gajendra O et al[22]	Lakhani K et al[6]	Kashyap R et al[5]	Singh SP et al[9]	Present study
Year of study	1983	2001	2007	2009	2008	2005	2013	2015
Study population	408	398	408	1582	100	111	608	100
Sex Ratio (M:F)	3:1	3.5:1	2.2:1	NA	2.4:1	3.6:1	6:1	2.33:1
Haematemesis (%)	NA	NA	NA	NA	55	28.8	43.09	17
Melaena (%)	NA	NA	NA	NA	32	71.2	95.06	20
Both (%)	NA	NA	NA	NA	NA	56.8	41.78	63
Duodenal ulcer (%)	25	10.8	9.8	17.5	14	43.9	57.57	41
Gastric ulcer (%)	5	4.5	8.08	17.5	NA	17.1	1.18	13
oesophageal varices (%)	45.5	56	33.33	30.97	37	10.8	12.83	13
Erosive gastritis (%)	8.5	4.5	43.6	13	14	11.7	1.18	3
Malignancy (%)	NA	0.75	2.4	2	9	7.2	7.89	25

Table 6A: Comparison of clinical and aetiological spectrum of UGIB in different study series

Bleeding peptic ulcers are more in males (52.8%) in comparison to females (56.7%) so as the duodenal ulcers i.e. male (42.8%) female (36.7%), but gastric ulcers bleed more in females (20%) than in males (10%). In cases of oesophageal varices and malignancy, case predilection to male sex was found. (Table 7).

Causes	Male		Female	
	No.	%	No.	%
Peptic Ulcer	37	52.8	17	56.7
CDU	30	42.8	11	36.7

GU	7	10.0	6	20.0
Oesophageal varices	8	11.4	5	16.7
Malignancy	18	25.7	7	23.3
Gastric polyp	3	4.9	0	0
Mallory-Weiss tears	1	1.4	0	0
Dieulafoy's lesion	1	1.4	0	0
Gastric erosions	2	2.8	2	6.7
Total	**70**	**100**	**30**	**100**

Table 7: Sex incidence of Upper GI bleeding due to various causes

Total 56 cases had undergone biopsy. Out of it, 37.5% cases were diagnosed as gastric malignancy of body and antrum by biopsy whose endoscopic diagnosis was the same. Whereas, 10.7% cases diagnosed endoscopically as benign lesion, but resulted to be malignant on biopsy. (Table 8).

Endoscopic diagnosis	Biopsy finding	Incidence	Percentage
Gastric ulcer	Gastric ulcer	7	12.5
Duodenal ulcer	Duodenal ulcer	17	30.4
Oesophageal growth	Carcinoma GE junction	3	5.4
CDU	Duodenal carcinoma	1	1.8
Gastric carcinoma	Gastric carcinoma	21	37.5
Benign gastric ulcer	Gastric carcinoma	6	10.7
Gastric polyp	Gastric carcinoma	1	1.8
Total		**56**	**100**

Table 8: Endoscopic diagnosis vs. biopsy finding

Out of total 54 cases presented with peptic ulcer having upper gastrointestinal bleeding, 27.8% of cases were having visible vessel on ulcer base without active bleeding (classified as Forrest IIa). 13% of cases were having oozing from the ulcer (Forrest Ib). 20.4% cases were having overlying fresh clot (Forrest IIb) and same 20.4% cases were found to be of dark base covered with haematin (Forrest IIc). Two cases (3.7%) had visible spurting of blood on endoscopy (Forrest Ia). 14.8% cases were clean ulcer without clot or visible vessel (Forrest III). (Table 9).

Grade	Forrest classification	No. of cases	% Age of cases
Ia	Spurting bleeding	2	3.7
Ib	Non-spurting active bleeding {oozing}	7	13
IIa	Visible vessel (no active bleeding)	15	27.8
IIb	Non bleeding ulcer with overlying clot (non-visible vessel)	11	20.4
IIc	Ulcer with haematin covered base (dark base)	11	20.4
III	Clean ulcer round (no clot, no vessel)	8	14.8
	Total	**54**	**100**

Table 9: Bleeding peptic ulcers classified as per forrest classification of stigmata of recent bleeding

All findings in the study were compared with western and Indian series. All confirm with most of the series except malignancy. Majority of series reported low incidence of malignancy.

Upper gastrointestinal video endoscopy is the most commonly performed and superior modality of diagnostic tool in cases of upper gastrointestinal bleeding. No other modality is so accurate at present time. It not only enables us to locate the exact site of bleeding, but also allows to visualise superficial mucosal lesions, gross visual inspection of the upper gastrointestinal tract for multiple lesions in the real time as well as to take biopsy for histopathologic confirmation.

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