



Original Article

Endoscopic Evaluation of Transabdominal Sonographically Suggested Gastric Carcinoma

M A Alim¹, M A Ahad², M H Rashid³, Q T Islam⁴, A R M S Ekram⁵, M A Razzaque⁶

Abstract

Transabdominal ultrasonography (TAS) is a widely used imaging modality for large variety of abdominal complaints. But indeed it has limited values for diagnosis of gastrointestinal diseases. Literatures on the value of transabdominal ultrasonography on diagnosis and pre-operative staging of gastric cancer are sparse. So the aim of this study is to assess the accuracy and limitations of ultrasonography for diagnosis and detection of spreading of gastric carcinoma.

Fifty eight sonographically diagnosed patients were included in this study. UGI endoscopy was done in all patients. Five patients were excluded from study because of negative biopsy though endoscopy revealed suspicious lesion. The accuracy of conventional transabdominal sonography of fluid filled stomach was evaluated for diagnosis of gastric carcinoma as compared to endoscopy. The age range was between 14-75 years with mean age 43.5 years (SD ± 14.2). The maximum numbers of patients (28.3%) were within the age group 40-49 years. The male and female ratio was 1.2:1. Fifty (94.3%) out of 53 patients of sonographically detectable gastric carcinoma actually have true malignancy proven by endoscopic biopsy and 3 (5.6%) were endoscopically normal & no biopsy was taken. Distal gastric carcinoma has been more precisely located than proximal by sonography. Besides this sonography provided an estimate of extragastric spread of tumour (34%) which is not possible by endoscopy. So in conclusion transabdominal sonography is an useful supportive modality for diagnosis and pre-operative assessment of exogastric spread of gastric cancer and indeed a supplementary diagnostic procedure to endoscopy.

TAJ 2007; 20(1): 48-51

Introduction

Gastric cancer is one of the most prevalent malignant tumour¹⁻². Trans-abdominal ultrasound (TAS) has not been found useful for the diagnosis of gastric cancer owing to the presence of intraluminal gas throughout the abdomen that limit

the transduction of ultrasound wave. Despite of this limitations Ultrasonography is often used as a first imaging modality in a large variety of abdominal complaints and clinically unsuspected patients may be imaged first by it. Because it is considered as non-invasive, easily available and

¹ Assistant Professor, Department of gastroenterology, Rajshahi Medical College, Rajshahi.

² Assistant Professor, Department of gastroenterology, Rajshahi Medical College, Rajshahi.

³ Junior consultant, Medicine, Paba upazilla health complex, Rajshahi.

⁴ Professor, Department of Medicine, Rajshahi Medical College, Rajshahi.

⁵ Professor, Department of Medicine, Rajshahi Medical College, Rajshahi.

⁶ IMO, Department of Medicine, Rajshahi Medical College, Rajshahi.

hazardless procedure. Some investigators have distended the stomach with water for better performance and although difficulties still remain with adequate visualization of proximal stomach; they Report a 42% accuracy rate for T (tumour) and 66% accuracy for N (nodal) Staging⁽³⁾. So The aim of our study was to assess the accuracy and limitation of the transabdominal ultrasonography for diagnosis & for detection of extragastric spread of gastric carcinoma.

Materials and methods

Fifty eight ultrasonographically diagnosed patients were enrolled in this study. The study was conducted in gastroenterology department of Rajshahi Medical College Hospital during the period from January 2007 to June 2008. All patients were underwent upper GI endoscopy (Pentax EPK1000) with biopsy and biopsy material were sent for histopathological examination. Five biopsy negative patients were excluded from study though endoscopy revealed suspicious lesion. Every patient was required to drink water to fill stomach and examined

sonographically using 3.5- 5 MHz transducer in supine position ,left and right decubitus position to visualize the lesions to detect the location of tumour⁽⁴⁾. Other demographic data including clinical presentation were recorded in a pre-structured proforma. All patients gave oral informed consent to participate in the study. Data were analysed with statistical package of social science (SPSS -version -11.5). Variables were recorded as descriptive frequencies, difference were reported as statistically significant if the P value is <0.05. Data were expressed as mean, standard deviation and 95% confidence Interval (CI).

Results

Fifty three transabdominal sonographic suggestive gastric carcinoma patients were present in this study. The age range was between 14-75years with mean age 43.5years (SD -14.2). The maximum number of patients (28.3 %) were within the age group 40-49years .The male and female ratio was 1.2 :1 (Table-1).

Table-1: Clinico-demographic profiles of patients (n= 53)

Age	Range (15-75yrs)	Mean(43.5yrs)	Median (40yrs)	Standard deviation (14.2)
Sex	Male =29	Female =24	Ratio=1.2:1	
Occupation	Farmer (32.1%)	Housewives (39.6%)	Daily labour (5.7%)	Others (22.6%)
Abdominal pain	53	(100%)		
Vomiting	36	(67.9%)		
Anorexia	53	(100%)		
Weight loss	49	(92.5%)		
UGI bleeding	10	(18.9%)		
Ascites	8	(15.1%)		
Supra-clavicular lymphadenopathy	6	(11.3%)		
Palpable liver	5	(9.4%)		
Palpable epigastric mass	29	(54.7%)		

The commonest symptoms with which patients of gastric carcinoma presented to us were abdominal pain,& anorexia (100%).Other symptoms were weight loss(92.5%) vomiting (67.9%), epigastric lump (54.7%) and rarely with abdominal distension(ascites). Abdominal lymphadenopathy were found in (11.3%) of patients. Liver metastasis, ascites and pelvic metastasis (Krukenburg tumour) were seen 11.3%, 15.1% & (1.8%) respectively. (Table-2)

Table -2: Exogastric extent & distal spread of gastric carcinoma as shown by sonography (n=53)

Exogatric extent and distant spread	No. of patients (%)
Liver	4(7.5%)
Para-aortic LN	5((9.4%)
Ascites	6(11.3%)
Pelvic (Krukenburg tumour)	1(1.9%)
Liver metastasis with ascites	2(3.8%)
No evidence of metastasis	35(66.0%)

LN= Lymph node

Majority (50.9%) of cases, sonography could not depict the site of involvement of tumour. But antral involvement has been more precisely mentioned in this study. Only one patient has fundic carcinoma (Table-3)

94.3% of sonographically detected gastric carcinoma patients were found positive

endoscopically as well as histologically. Only three (5.6%) patients appear normal endoscopically though sonologist suggested as gastric carcinoma. The commonest site of affliction of gastric carcinoma in this study was distal or antra (52.8%) followed by body (32.07%) and cardia. (3.7%) (Table-3).

Table-3: Relation of transabdominal USG diagnosis with UGI endoscopic findings (n=53)

Transabdominal USG findings	UGI endoscopic findings with site of involvement					Pearson Chi -square Value=33.418
	Lower third	Middle third	Upper third	Diffuse	Normal	
Antral growth/thickening	12(22.6%)	3(5.6%)	0	1(1.8%)	2(3.7%)	Df=12 X ² =.001 significant
Gastric carcinoma involving body	2(3.7%)	4(7.5%)	0	1(1.8%)	0	
Fundic gastric carcinoma	0	0	1(1.8%)	0	0	
Gastric carcinoma, Site not mentioned	14(26.4%)	10(18.8%)	1(1.8%)	1(1.8%)	1(1.8%)	
Total= 53	28(52.8%)	17(32.07%)	2(3.7%)	3(5.6%)	3(5.6%)	

USG= Ultrasonography

UGI= Upper gastrointestinal



Fig. 1: US image obtained through the long axis of the stomach shows a large hypo-echoic tumor (arrows) that replaces the gastric wall; echogenic air in the lumen creates a pseudokidney appearance.

Discussion

Transabdominal ultrasonography is applied widely in clinical practice. When condition of the patients are suitable, transabdominal US can detect gastric mass with thickening of stomach wall, perigastric lymph nodes, as well as peritoneal, hepatic and pelvic metastasis. Gastric carcinoma may be seen sonographically as a hypo-echoic or

moderately echoic circumscribed wall thickening with irregular contour and reduced or absent peristalsis. Other sonographic picture can be polypoid mass, lack of distensibility and luminal narrowing⁵⁻⁶. Ultrasonography can detect abdominal lymphadenopathy and can also be able to differentiate malignant from benign. Large, Irregular, inhomogeneous and fusional lymph nodes are fairly indicative of malignancy⁴

The ratio of male patients is twice the female except in young group where the sex ratio is almost equal in most reports⁽⁷⁾. In previous studies upper abdominal mass has been noted in 71% of patients in young patients⁽⁸⁾. In our series the median age of patients was 40 years and most of patients were virtually young. So the findings regarding gender ratio and palpable epigastric mass almost mimic with earlier studies.

Transabdominal sonography has identified the distal carcinoma more appropriately rather than proximal. It significantly coincides with endoscopic interpretation in our study. Virtually gastric cancer of younger patients have more aggressive lesions with rapid extra-gastric spread and carry worse prognosis. From our study it is evident that as most of the patients were in earlier

age group and advanced disease with epigastric mass, as a result transabdominal ultrasonographies were able to detect the lesion more precisely than expected.

In our study liver metastasis were seen in 11.3% patients and para-aortic lymph nodes were identified in 9.4% patients. Free fluid collections were found in 15.1%—patients, all of which were detected clinically. Derchi et al had stated that when patients with gastric carcinoma referred for evaluation for liver metastasis it is worth while to get additional information about tumour extent by complete sonographic examination of abdomen and pelvis and by making an attempt to visualize the primary neoplasm and its relations to surrounding structures⁹. Currently endoscopic ultra sonography (EUS) and CT scan of abdomen have been considered as a useful modalities for preoperative staging of cancer¹⁰. However EUS is a complex procedure and can not be performed successfully in some patients. On the other hand CT scan is costlier and also some radiological hazards. Though sonography underestimates the extra-gastric extent of tumour but it can provide a rough estimate the spread in majority of cases.

Conclusion

This study concludes that transabdominal sonography of fluid filled stomach is a non-invasive, hazardless easily available supportive diagnostic tool and suggest itself a supplementary diagnostic procedure to endoscopy. It is also considered to be useful means for detection of abdominal metastasis and has got some justified values for preoperative staging of gastric cancer patients.

References

1. Sipponen P, Jarvi O, Kekki M, Siurala M. Decreased incidence of intestinal and diffuse types of gastric carcinoma in Finland during a 20years period. *Scand J Gastroenterol* 1987; 22:865-871.
2. Silverburg E. Cancer statistics, 1980. *Cancer J Clin* 1980; 30:23-38.
3. Koh JT and Wang T. Tumours in stomach. In: Feldman M, Friedman SL and Sleisenger HM, ed- Sleisenger and Fordtran's *Gastrointestinal and Liver Disease*, 7th ed Philadelphia, Saunders 2002; 1 :829-845
4. Sheng-Ri Liao, Ying Dai, Ling Huo, Kun Yan et al. Transabdominal Ultrasonography in pre-operative staging of gastric cancer. *World J Gastroenterol* 2004; 10(23):3399-3404.
5. Lim JH, Jeong YM. Sonography of stomach: an in vitro study to determine the anatomic cause of inner hyperechoic and hypoechoic layers of gastric wall. *Am J Roentgenol* 1994; 162:335-338.
6. Sing S, Chwdhury V. Efficacy of high resolution transabdominal sonography of a fluid filled stomach in the evaluation of gastric carcinoma. *Ind J Radiol Imag* 2005; 15:4 :421-426
7. Tamura P, Cutis C. Carcinoma of stomach in the young adult. *Cancer* 1960; 13:379-385.
8. Sharma GC, Vickers P. Gastric carcinoma in the young. *Ind J Surg* 1976; 38:207-210.
9. Derchi LE, Biggi E, Rollandi GA, Cicio GR, Neumaier CE. Sonographic staging of gastric cancer. *AJR* 1983; 140:273-276
10. Xi WD, Zhao C, Ren GS. Endoscopic ultrasonography in pre-operative staging of gastric cancer: determination of tumour invasion depth, nodal involvement and surgical respectability. *World J Gastroenterol* 2003; 9:254-257.

All correspondence to:
M A Alim
Assistant Professor
Department of Gastroenterology
Rajshahi Medical College, Rajshahi