Assessment of physicians' adherence to the guidelines for the management of gastroesophageal varices among patients with liver cirrhosis in Upper Egypt

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Background
Gastroesophageal varices are the most common lethal complication of liver cirrhosis, because their rupture results in variceal hemorrhage. Gastroesophageal varices are present in ~ 50% of patients with cirrhosis. Variceal hemorrhage occurs at a yearly rate of 5–15%. This study was designed to assess adherence of physicians to guidelines regarding management variceal hemorrhage.

Patients and methods
A total of 154 physicians from Upper Egypt caring for cirrhotic patients with gastroesophageal varices were enrolled. A questionnaire with 23 items was distributed among the participants. It was formed mainly from personnel data of physicians and their experience in the management of variceal bleeding.

Results
The mean age of the participants was 40.22 ± 10.67 years, and 80% were younger than 40 years. The majority of them was males and had MBBCH. Duration of experience ranged between 1 and 25 years. Duration of experience had insignificant effect on physician adherence to guidelines.

Conclusion
Physicians had good adherence to guidelines in the management of variceal bleeding regarding management of active bleeding and secondary prophylaxis, but lacked knowledge about screening programs for gastroesophageal varices.

Keywords:
gastroesophageal bleeding, liver cirrhosis, prophylaxis, questionnaire

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Introduction

Gastroesophageal varices are the most common lethal complication of liver cirrhosis, because their rupture results in variceal hemorrhage. Gastroesophageal varices are present in ~ 50% of patients with cirrhosis. Their presence correlates with the severity of liver disease [1].

The gold standard in the diagnosis of varices is esophagogastroduodenoscopy (EGD) [2]. Screening EGD is recommended once cirrhosis is diagnosed. This study was designed to assess the adherence of physicians to the AASLD 2007 guidelines for management of gastroesophageal varices among patients with liver cirrhosis.

Patients and methods

The study was approved by the Faculty's Ethics Committee. Further, permission was obtained from all department heads who had been assured that confidentiality would be maintained and ethical principles would be followed.

The study included 154 physicians from different University Hospitals at Upper Egypt caring for cirrhotic patients with gastroesophageal. We designed a four-page questionnaire consisted of two parts: (a) personal information regarding the physician and (b) professional experience with cirrhotic patients at risk of gastroesophageal varices.

Questionnaire distribution

The questionnaires were distributed by personal contact at professional conferences and during seminars. The questionnaires were collected immediately after completion. Doctors were also contacted by e-mails.

Statistical analysis

The data from questionnaires were entered into spreadsheets of Microsoft Excel before being

transferred to the Statistical Package for Social Sciences (SPSS) software (SPSS Inc., Chicago, Illinois, USA), version 16 for Windows 7 (Microsoft Corp., Redmond, Washington, USA) to be analyzed.

The results

Mean age of the participants was 40.22 ± 10.67 years, most physicians (80%) were less than 40 years of age, and 89 (77.3%) of them were males. Other baseline characteristics are summarized in Table 1.

Part I of questionnaire (general information)

Most physicians considered EGD as the gold standard method for diagnosing gastroesophageal varices, and only three (2.6%) physicians considered that measurement of portal vein pressure was the standard method.

Regarding risk factors for variceal bleeding, the majority (80%) of the physicians considered that all mentioned answers are risk factors for variceal bleeding. Overall, 11 (9.6%) and seven (6.1%) considered that the size of varix and pressure inside varix, respectively, were important risk factors.

Part II of questionnaire (screening programs)

The majority (95%) of the physicians considered screening should be done once cirrhosis is diagnosed, whereas only 20 (17.4%) considered screening after appearance of signs of portal hypertension.

On screening session, if no varices were detected, 44 (38.3%) physicians recommended follow-up sessions every 6–12 month, whereas 48 (41.7%) recommended 2-year interval, and 19 (15.5%) recommended follow-up every 3 years. A total of 76 (66.1%) physicians recommended follow-up for those patients with gastroesophageal varices type I with no risky signs, whereas 30 (26.1%), four (3.5%), and five (4.3%) physicians recommended band ligation, sclerotherapy, and band ligation with sclerotherapy, respectively.

The presence of gastroesophageal varix type I with risky signs required band ligation as recommended by 43 (37.4%) physicians, whereas 20 (17.4%) physicians recommended sclerotherapy, and 47 (40.9%) physicians recommended both lines.

Part III of questionnaire (management of active bleeding)

Patients should be stabilized before doing upper endoscopy in patients with esophageal bleeding as recommend by 67 (58.3%), whereas 39 (33.9%) and 67 (58.3%) physicians performed endoscopy within 12 and 24 h, respectively.

Table 1 Characteristics of the participant physicians (*n*=115)

Age (years)	
<40	92 (80)
>40	23 (20)
Mean±SD	40.22±10.67
Sex	
Male	89 (77.3)
Female	26 (22.7)
Place of work	
Assiut	63 (55)
Sohag	25 (21.7)
Fayoum	12 (10.4)
Minia	6 (5.2)
Qena	5 (4.3)
Beniswif	4 (3.4)
Highest qualification	
MBBCH	56 (48.7)
MSC	49 (42.6)
MD	10 (8.7)
Specialty of physician	
Tropical medicine and gastroenterology	90 (78.3)
Internal medicine	25 (21.7)
Duration of experience (years)	4 (1-25)
Frequency of (per year)	
Band ligation	300 (100-800)
Sclerotherapy	15 (2-250)

Data were expressed in the form of frequency (%) and median (range).

To prevent attack of bleeding after controlling the esophageal bleeding, most physicians (93.9%) preferred combination between endoscopic variceal ligation (EVL) and non selective B blocker (NSBB), whereas five (4.3%) and two (1.7%) physicians preferred EVL and NSBB, respectively.

Regarding the cause of bleeding recurrence after band ligation, 85 (73.9%) physicians considered postband ulcer, whereas 17 (14.8%) physicians considered failure of EVL is the cause, and 10 (8.7%) physicians and three (2.6%) physicians considered bleeding from another source and other causes.

Part IV of questionnaire (secondary prophylaxis)

Adherence of the patients to follow-up was affected mainly by the cost, as seen by 55 (47.8%) physicians, whereas 47 (40.9%) physicians stated that lack of patient's awareness is the main cause. Follow-up re-endoscopy after banding should be done after 1–2 weeks as recommended by 84 (73%) physicians, whereas 29 (25.2%) physicians perform follow-up after 1–3 months, and two (1.8%) physicians prefer follow-up after another attack of bleeding.

Score of adherence based on sex, duration of experience, and age

Each correct answer was scored with one point, and total score of physician was collected. It was noticed

that age (either above or below 40 years) and duration of experience (either above or below 5 years) had insignificant differences regarding total score, but male physicians had significantly higher score in comparison with female physicians (16.03 ± 1.18 vs. 12.56 ± 1.43; $P = 0.01$; Tables 2–5).

Discussion

EGD is of value in diagnosing varices, as varices should be sought in all patients with clinical suspicion of cirrhosis, especially if they have stigmata of chronic liver diseases, such as spider nevi, palmar erythema, splenomegaly, and ascites. EGD is considered the gold standard for the diagnosis of gastroesophageal varices [3]. Direct visualization is needed to assess the size and presence of high-risk stigmata of bleeding, to decide if prophylactic variceal banding is warranted [4].

Examination for esophageal varices (EV) is best done during withdrawal of the scope, with the esophagus maximally insufflated with air and the stomach completely deflated to avoid any mucosal folds that can be interpreted as varices [5].

Regarding timing of screening for gastroesophageal varices, most physicians (95%) recommend it once liver cirrhosis is diagnosed, whereas only 17.4% considered it once signs of portal hypertension appear. A study done at United States between first of January 2000 to 31 December showed that 1688 of 172 854 EGDs were performed for the purpose of screening of varices.

Table 2 Part I of the questionnaire included general information

Questions	*n*=115
Gold standard for diagnosis	
Measurement of portal vein pressure	3 (2.6)
Upper endoscopy	112 (97.4)
Platelets level	0
Child score	0
Important risk factor for esophageal bleeding	
Child score	1 (0.9)
Size of the varix	11 (9.6)
Pressure inside varix	7 (6.1)
Tension on the varix wall	3 (2.6)
All of them	92 (80)
Other	1 (0.9)
Preferred guidelines[a]	
AASLD	81 (70.4)
APASL	4 (3.5)
UK	1 (0.9)
Local guidelines	26 (22.6)
Other	3 (2.6)

Data were expressed in the form of frequency (%). Corrected answers were written in bold. [a]Any answer was accepted.

Table 3 Adherence of physicians to screening programs based on guidelines

Questions	*n*=115
When do you think screening upper endoscopy should be performed for cirrhotic patient?	
Once cirrhosis is diagnosed	95 (82.65)
According to his child score	0
Presence of signs of portal hypertension	20 (17.4)
Others	0
On screening upper endoscopy session, no varices were detected in compensated cirrhotic patient. When will you advice this patient to come for follow-up?	
6-12 month	44 (38.3)
2 years	48 (41.7)
3 years	19 (16.5)
Others	4 (3.5)
During screening cirrhotic patient, small varices with no risky signs were detected. What is your recommendation for that patient?	
EVL	1 (0.9)
NSBB	68 (59.1)
Follow-up endoscopy	46 (40)
Others	0
What will you recommend if you screened cirrhotic patient and found medium- or large-sized varix without risky signs?	
NSBB	20 (17.4)
EVL	29 (25.2)
Both	66 (57.4)
Others	0
What will you recommend in the same previous condition but with high risky signs?	
NSBB	13 (11.3)
EVL	33 (28.7)
Both	69 (60)
Others	0
On screening session of cirrhotic patient, small varices with risky signs were detected, what will be your decision?	
NSBB	50 (43.5)
EVL	27 (23.5)
Both	38 (33)
Others	0
What do you mostly prefer for the management of cirrhotic patient with recently diagnosed medium/large varices (no history of bleeding), considering presence of no contraindications to medication and considering equal efficacy of esophageal band ligation and nonselective beta-blocker?	
Band ligation	47 (40.9)
NSBB	53 (46.1)
Others	15 (13)
On screening upper endoscopy sessions, you discovered gastroesophageal varix type 1 with no risky signs, how will you choose to manage the condition?	
Band ligation	30 (26.1)
Sclerotherapy	4 (3.5)
Both	5 (4.3)
Depend on medical treatment and follow up	76 (66.1)
On screening upper endoscopy sessions, you discovered gastroesophageal varix type 1 with risky signs, how will you choose to manage the condition?	
Band ligation	43 (37.4)
Sclerotherapy	20 (17.4)
Both	47 (40.9)
Depend on medical treatment and follow-up	5 (4.3)

Data were expressed in the form of frequency (%). Corrected answers were written in bold. [a]Any answer was accepted.

Table 4 Adherence of physicians to management of active bleeding

Questions	*n*=115
What is the optimal time to perform upper endoscopy after bleeding from esophageal varices?	
Within 12 h	39 (33.9)
Within 24 h	9 (7.8)
Once patient is stabilized	67 (58.3)
Others	0
What is the optimal hemoglobin level that should be maintained after bleeding from esophageal varices?	
Around 5 g/dl	5 (4.3)
Around 8 g/dl	101 (87.8)
Around 12 g/dl	2 (1.7)
No specific level is required	7 (6.1)
After controlling of an attack of acute variceal bleeding, what will you recommend that patient to prevent another attack of bleeding?	
Combination of EVL and NSBB	108 (93.9)
EVL	5 (4.3)
NSBB	2 (1.7)
Others	0
A patient presents with repeated attacks of hematemesis not well responding to medical and endoscopic management, what is the best available management in this case?	
Shunt	(7)
TIPS	86 (74.8)
Liver transplantation	18 (15.7)
None	3 (2.6)
You recommend to continue vasoactive drugs after bleeding attack for:	
12 h	9 (7.8)
1 day	12 (10.4)
2 days	26 (22.6)
5 days	68 (59.1)
After bleeding attack, upper endoscopy was performed and band ligation to esophageal varices was done, what is the antibiotic you prescribe for the patient?	
Norfloxacin	25 (21.7)
Ceftriaxone	42 (36.5)
Both	44 (38.3)
None	4 (3.5)
Band ligation was done for esophageal varices. What do you think the cause of the rebreeding attack?	
Esophageal ulcer	85 (73.9)
Failure of EVL	17 (14.8)
Bleeding from another source	10 (8.7)
Others	3 (2.6)
How will you manage the previous condition?	
Reendoscopy	71 (61.7)
Medical therapy	40 (34.8)
Others	4 (3.5)

Data were expressed in the form of frequency (%). Corrected answers were written in bold. [a]Any answer was accepted.

Table 5 Adherence to prophylaxis against gastroesophageal bleeding

Questions	*n*=115
What are the factors that prevent patient from adherence to their follow-up?[a]	
The cost	55 (47.8)
Lack of patients' awareness	47 (40.9)
Postband complications	6 (5.2)
Others	7 (6.1)
If nonselective beta-blocker is used, hepatic venous pressure gradient should be maintained below:	
5 mmHg	12 (10.4)
7 mmHg	10 (8.7)
12 mmHg	90 (78.3)
20 mmHg	3 (2.6)
On endoscopic session after bleeding you discovered esophageal varices and band was done, when to follow-up?	
After 1-2 weeks	84 (73)
After 1-3 months	29 (25.2)
After another attack	2 (1.8)

Data were expressed in the form of frequency (%). Corrected answers were written in bold.[a]Any answer was accepted.

A significantly greater proportion of EGDs for variceal screening are performed in academic centers compared with community practice. Varices were found in 881 (52.2%) screened patients. Varices were found more often in Child–Pugh class B/C patients (71.9%) compared with those with Child–Pugh class A (42.7%). Of those with varices found, patients with Child–Pugh class B/C were more likely to have large varices than patients with Child–Pugh class A [6].

If no varices were detected during screening using EGD in compensated cirrhotic patient, follow-up upper endoscopy is performed in 3 years as chosen by 16.5% physician in the current study. Follow-up EGD for those with small varices with no risky sign is recommended by 40%.

Both NSBB and EVL in combination are considered for cirrhotic patients with medium-sized varices without risky signs as recommend by 57.4% of physicians, whereas 25.2 and 17.4% of them recommended EVL and NSBB, respectively. The presence of risky signs with medium-sized-varices requires NSBB, EVL, and NSBB with EVL as considered by 11.3, 28.7, and 60% of the physicians, respectively.

The presence of gastroesophageal varix type I with risky sign required band ligation as recommended by 37.4% of physicians, whereas 17.4% of physicians recommended sclerotherapy, and 40.9% physicians recommended both lines. Nonselective beta-blockers (propranolol and nadolol) remain the treatment of choice for prophylaxis for high-risk variceal bleeding; overall NSBBs can reduce the risk of the first episode of bleeding from 27 to 17% within 2 years in high-risk cirrhotic patients [7].

When NSBBs are used for primary prevention, the dose should be titrated to a resting heart rate of 55–60 beats/min, or adverse effects will develop. Another method to evaluate the response to NSBB therapy is to measure the hepatic venous pressure gradient. This represents the difference in pressure

between the portal and hepatic veins. The target reduction in hepatic venous pressure gradient is less than or equal to 12 mmHg or reduction of 20% compared with baseline, pretreatment levels [8]. Once this target is reached, the risk of variceal bleeding is reduced to less than 10%.

The timing of EGD in upper gastrointestinal bleeding remains somewhat controversial, especially considering disparate recommendations that suggest performing an early gastroscopy at varying time intervals following initial presentation. A retrospective cohort analysis of 2 066 707 admissions to acute care hospitals for upper gastrointestinal bleeding, using information drawn from the American National Inpatient Sample from 2007 to 2013. The main conclusion of the study is that early EGD is associated with low morbidity and mortality compared to delayed or no EGD [9].

Results from our questionnaire are considering another point of view as most of the physicians give the high priority to stabilization of the patient first regardless of the duration before the endoscopy, whereas 33.9% of the physicians perform it within 12 h. The difference is probably due to inappropriate knowledge of the guidelines, fear from medico legality, insufficient understanding of the fatality of that condition.

To prevent rebleeding between those who survived their bleeding attack, most physicians (93.9%) preferred the combination between EVL and NSBB, whereas five (4.3%) and two (1.7%) physicians preferred EVL and NSBB, respectively. This is consistent with a recent meta- analysis of five studies involving 476 patients comparing variceal band ligation (VBL) alone or in combination with NSBBs, which showed a reduced risk of rebleeding with combination therapy [relative risk (RR) = 0.44; 95% confidence interval (CI), 0.28–0.69) and lower mortality (RR = 0.58; 95% CI, 0.33–1.03). An analysis of a further four randomized-control trails involving 409 patients where pharmacological therapy was used alone or in combination with VBL showed variceal bleeding rates decreased with combination therapy ($P < 0.01$), but rebleeding from banding ulcers in the esophagus increased ($P = 0.01$) [10].

This work shows that adding pharmacological treatment to VBL significantly reduces the risk of further variceal bleeding. However, adding VBL to pharmacological treatment alone gives a nonsignificant decrease in rebleeding and no effect on mortality [11].

Liver transplantation is always an option but rarely used or appropriate in the setting of acute variceal hemorrhage. Regarding the prophylactic antibiotic after an attack of variceal bleeding, norfloxacin, and ceftriaxone should be prescribed in patients with variceal bleeding as recommend by 44 (38.3%) physicians, whereas 42 (36.5%) physicians used ceftriaxone and 25 (21.7%) physicians used norfloxacin. No antibiotic usage is recommended by four (3.5%) physicians.

A retrospective analysis of 383 patients showed that the rates of infection and death are lower in Child–Pugh A patients presenting with an acute variceal bleed in the absence of prophylactic antibiotics compared with class B and C patients [12]. The current guidelines recommend routine antibiotics in all cases of acute variceal hemorrhage regardless of Child–Pugh class and regardless of whether there is a confirmed infection or not.

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Conflicts of interest
There are no conflicts of interest.

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