



*Full Length Research Paper*

# Quality of care provided to cirrhotic patients in Tanta university hospital in Egypt

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Cirrhosis is a major cause of digestive disease–related morbidity and mortality. Evidence-based guidelines define the criteria and standards of care for patients with cirrhosis. This study aims to assess the quality of medical care provided to patients with liver cirrhosis in Tanta university hospitals in order to improve the outcomes and delay the occurrence of complications to patients admitted in internal medicine department tanta university hospital. This study included 400 cirrhotic patients evaluated at Internal Medicine Department, Tanta University Hospital during the period from January 2014 to December 2014. A specific questionnaire was used to evaluate the quality of care provided to cirrhotic patients by using evidence-based quality indicators (QIs), measuring care for ascites, variceal bleeding, hepatic encephalopathy, hepatocellular cancer and preventive care in patients with liver cirrhosis. Quality scores (maximum 100%) varied among individual indicators. There were 69.9% of patients with ascites and normal renal functions received diuretics while 52% received diagnostic paracentesis during hospitalization. Of patients admitted with gastrointestinal bleeding 85.1% received prophylactic antibiotic during hospitalization: 6.7% of patients had upper GIT endoscopy as primary variceal screening while 93.3% had upper endoscopy as secondary prophylaxis. 78.5% of patients with HCC received the recommended screening and 62.5% of patients received the recommended management. 100% of patients with HE received the recommended care. Variceal bleeding is the major presenting complication in patients with liver cirrhosis. Secondary prophylactic endoscopic therapy that delay bleeding and follow up sclerotherapy was done in 93.3% of cases. On the other hand fairly low standard care with primary prophylaxis 6.7% for varices. As regarding the patients with hepatic encephalopathy the care was standard 100%. As regarding patients with HCC 78.5% of cases received the indicated screening and 62.5% of patients with HCC received the recommended treatment.

**Keywords:** Care Quality cirrhotic patients Tanta university hospital

## INTRODUCTION

Liver cirrhosis is a common hepatic disease in the world. Established cirrhosis has a 10-year mortality of 34–66% (Sørensen et al., 2003). Appropriate medical care for cirrhosis can delay complications, improve quality of life,

and possibly extend survival (Fernandez et al., 2007).

Patients with cirrhosis are susceptible to several complications of advanced liver disease, including ascites, variceal bleeding, encephalopathy which occurs in 30-45% of cirrhotic patients (Todd, 2011), and hepatocellular cancer. These complications account for significant morbidity and mortality (Kanwal et al., 2010).

With an increasing emphasis on quality in health care

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**Table 1.** General preventive measures known to improve the outcome and delay complications of cirrhosis

General preventive measures	Achieved		Not achieved		No of patients eligible for those measures
	N	%	N	%	
Follow up by LFTs , CBC and US every 6-12 months	203	50.75	197	49.25	400
Endoscopy for early detection and follow up of varices every 6-12 months	75	18.75	325	81.25	400
No history of GIT bleeding	5	6.7			
History of GIT bleeding	70	93.3			
Estimation of alpha-fetoproteins for early detection of HCC every 6-12 months	18	4.5	382	95.5	400
Taking liver support	304	76.0	96	24.0	400
Avoidance of hepatotoxic drugs as (NSAIDs)	310	77.5	90	22.5	400
Prophylactic vaccines as HBV ,HAV, influenza and pneumococcal vaccines	1	0.25	399	99.75	400
Taking prophylactic NSBBs.	123	30.75	277	69.25	400
No history of GIT bleeding	55	44.7			
History of GIT bleeding	68	55.3			
Diet control (salt restriction)	94	23.5	306	76.5	400

and recognition of inconsistency in management, it is critical to understand and improve the current process of care in cirrhosis (Kanwal et al., 2010). Although clinically useful, guidelines are limited because they do not specify explicit measurements that can be monitored and tracked as part of a continuous quality improvement program. Explicit quality indicators (QIs), which might be derived in part from guidelines, narrowly define and specify the clinical circumstances under which process of care should be enacted (Runyon and AASLD Practice Guidelines Committee, 2009).

The cirrhosis QI set provides practitioners with a tool to measure the quality of care and identify opportunities for improvement. An additional goal of the quality assessment effort is to increase the awareness of the clinical guidelines and their supporting evidence among all practitioners (Kanwal et al., 2010).

## PATIENTS AND METHODS

The study included 400 cirrhotic patients evaluated at Internal Medicine Department, Tanta University Hospital during the period from January 2014 to December 2014. A specific questionnaire was used to evaluate the quality of care provided to cirrhotic patients by using evidence-based quality indicators (QIs), measuring care for ascites, variceal bleeding, hepatic encephalopathy, hepatocellular carcinoma and preventive care in patients with liver cirrhosis with some changes to it to match the local environment and the Egyptian patients (Kanwal et al., 2010; Paula et al., 2014).

## RESULTS

This study included 400 patients with cirrhosis. Hepatic encephalopathy was present in (123) cases 30.8% , variceal bleeding in (71) cases 17.8 % and HCC in 8 cases (2%). 69% of patients had at least one hospitalization. Ascites was the most presenting complication (271) patients 67.8% among them 20 cases 7.4% was complicated by SBP and 32 cases 11.8% was complicated by hepatorenal syndrome.

There were (203) 50.8 % of cases was performing LFTs, CBC and US every 6-12 months , 18.8 % on follow up endoscopy divided as follow [(5) cases of them (6.7%) had upper endoscopy as a primary prophylaxis and (70) cases 93.3% as a secondary prophylaxis]. Alpha-fetoprotein was estimated every 6-12 months in 4.5 %. There were (203) cases 50.8% subjected to HCC screening, (18) cases 8.9% received abdominal ultrasound with AFP estimation while (185) cases 91.1% received ultrasound only. Diet control in the form of salt restriction was done in 23.5% of cases, food supplementations were taken in 76% of cases, knowledge to avoid hepatotoxic drugs as NSAIDs was present in 77.5 % of cases. Prophylactic NSBBs was noted in (55) cases 44.7% as a primary prevention and in (68) cases 55.3% as a secondary prevention and only one patient (0.25%) received a prophylactic hepatitis B vaccine as table (1) shows.

There were 239 cases with ascites and normal renal function, (167) cases 69.9% of them received diuretics. 225 cases eligible for indicator No.2 after exclusion of 46 cases just presented for follow up (not hospitalized),

**Table 2.** Rate of Quality indicators provided to patients with ascites (percentage of patients who received the care indicated among those who were eligible for the indicator).

No	The quality indicators (QIs)	No of patients received the recommended care		No of patients eligible for each indicator
		N	%	
1	Among patients with ascites and normal renal function, percent who received diuretics	167	69.9	239
2	Among hospitalized ascitic patients, percent who received a diagnostic paracentesis for early detection of SBP	117	52.0	225
3	Among patients diagnosed with SBP, percent who received suitable antibiotic within 6 hours of the test result	20	100.0	20
4	Among hospitalized ascitic patients, percent who received prophylactic antibiotics against nosocomial acquired SBP	200	97.6	205

**Table 3.** Rate of Quality indicators provided to patients with GITB (percentage of patients who received the care indicated among those who were eligible for the indicator).

No	QIS	No of patients received the recommended care		No of patients eligible for each indicator
		N	%	
1	Among patients with small varices, percent who received non selective B-blockers and subjected to follow up endoscopy every 1-3 years	27	100.0	27
2	Among patients with medium to large varices, percent of those subjected to variceal ligation until varices obliteration and 1-3 month after obliteration combined with non selective B-blockers then follow up endoscopy every 6-12 months.	44	100.0	44
3	Among patients admitted with gastrointestinal bleeding, percent of those received antibiotics during hospitalization	40	85.1	47

**Table 4.** Rates of Quality indicators provided to patients with HCC (percentage of patients received the care indicated among those who were eligible for the indicator).

No	Qis	No. of patients received the recommended care		No. of patients eligible for each indicator
		N	%	
1	Among patients with HCC, percent who were subjected to routine follow up by US, CAT and MRI every 3-6 months	7	87.5	8
2	Among patients with HCC, percent who received the suitable management	5	62.5	8

(117) cases 52% of patients received a diagnostic paracentesis during hospitalization for early detection of SBP. 20 cases eligible of indication No.3 all of them received a suitable antibiotics within 6 hours of diagnose of SBP. 205 cases eligible for quality No.4 after exclusion of 66 cases (46 cases just presented for follow up and 20 cases already had SBP), (200) cases 97.6% of them received a prophylactic antibiotics against SBP as seen in table (2)

Table (3) shows that 27 cases of patients with GITB eligible for indicator No.1 (grade I) all of them received

the recommended care. 44 cases with GITB eligible for indicator No.2 (grade II, III) all of them received the recommended care. 47 cases with GITB eligible for indicator No.3 (40) cases 85.1% with active GITB received a prophylactic antibiotic during index hospitalization.

We can find in table (4) 8 cases of patients with HCC eligible for quality indicator No.1, (7) cases 87.5% of them subjected to routine follow up by us, CAT and MRI every 3-6 months. 8 cases of patients with HCC eligible for quality indicator No.2, (5) cases (62.5 %) of them

**Table 5.** Rates of Quality indicators provided to patients with HE (percentage of patients who received the care indicated among those who were eligible for the indicator).

No	Qis	No of patients received the recommended care		No of patients eligible for each indicator
		N	%	
1	Among hospitalized patients with HE, percent who there was early detection and treatment of precipitating factors	123	100.0	123
2	Among hospitalized patients with HE, percent who subjected to maximally 72 hrs restriction of proteins and increasing carbohydrates in diet	123	100.0	123
3	Among hospitalized patients with HE, percent who received oral disaccharides or rifaximin	123	100.0	123

**Table 6.** Reasons of not receiving the recommended care:

The quality indicators (QIs) and number of cases not received the recommended care	No documented reason		Patient refusal		Medical cause		Other reasons		P-value
	N	%	N	%	N	%	N	%	
Diuretic use (n= 72)	7	9.7	5	6.9	60	83.3	0	0.0	<0.001*
Diagnostic paracentesis during hospitalization for early detection of SBP (n= 108)	5	4.6	4	3.7	0	0.0	99	91.7	<0.001*
Prophylactic antibiotics against nosocomial acquired SBP (n= 5)	5	100.0	0	0.0	0	0.0	0	0.0	0.033*
Antibiotics in patients with gastrointestinal bleeding (n= 7)	6	85.7	0	0.0	1	14.3	0	0.0	0.025*
Routine follow up by US, CAT and MRI every 3-6 months in patients with HCC (n= 1)	0	0.0	1	100.0	0	0.0	0	0.0	0.419
Suitable management of patients with HCC (n= 3)	0	0.0	0	0.0	0	0.0	3	100.0	0.657

\*\* Statistically significant difference

received the suitable management.

In table (5) we can see that all patients with hepatic encephalopathy were eligible to the quality indicators No. 1, 2, 3 and all received the recommended care.

Table (6) shows the documented reasons for not receiving diuretics in ascitic patients included, (60) cases 83.3% were due to a medical cause (had HE and severe hypotension with or without variceal bleeding), (5) cases 6.9% refused and (7) cases 9.7% had no documented reason. There was statistically significant increase in patients who were too sick in comparison to other reasons of not receiving the recommended care. (P value = <0.001). The documented reasons of not receiving diagnostic paracentesis during hospitalization for early detection of SBP in ascitic patients included, (99) cases (91.7 %) were already taking a prophylactic antibiotic against SBP and had no symptom of SBP, (4) cases 3.7% patients refused and (5) cases 4.6% had no documented reason. There was statistically significant decrease in patients who refused diagnostic paracentesis in comparison to other reasons of not receiving the recommended care. (P value= <0.001). (5) Cases not receiving a prophylactic antibiotic against nosocomial acquired SBP in hospitalized ascitic patients without an

obvious reason. The documented reasons of not receiving a prophylactic antibiotic in patients with GITB included, one case 13.4% was too sick and (6) cases 85.7% had no documented reason. There were statistically significant decrease in patients who were too sick in comparison to patients had no documented reason. The documented reasons of not receiving routine follow up by US, CAT and MRI every 3-6 months in patients with HCC included, one patient refused. The documented reasons of not receiving the suitable management of patients with HCC included, (3) cases needed liver transplantation as they were not responding to other procedures of management.

## DISCUSSION

In this study, some of the published set of quality indicators was applied to patients with liver cirrhosis.

In the present study there was only one patient who received hepatitis B vaccine while no one received hepatitis A vaccine. Hachem et al. found that only 6.5% received hepatitis A vaccine and 8.2% received hepatitis B vaccine in patients that had liver cirrhosis in some of a

large veterans administration medical centers (Hachem et al., 2008). While Shim et al. found that less than 30% of susceptible patients with chronic HCV received at least one immunization against hepatitis A vaccine (Shim et al., 2005).

Findings of the present study demonstrated that there was 69.9% of patients had ascites with normal renal function received diuretics (including spironolactone with or without loop diuretics), while 52% of hospitalized ascitic patients received a diagnostic paracentesis for early detection of SBP.

This is in agreement with Kanwal et al. who demonstrated that 82.8% of patients with ascites and normal renal function received diuretics (including spironolactone with or without loop diuretics), while 57.6% of hospitalized patients with ascites received a diagnostic paracentesis for early detection of SBP (Kanwal et al., 2010).

20 patients diagnosed as SBP 100% received the suitable antibiotic within 6 hrs of the ascitic fluid analysis result. While Bassett et al. demonstrated that (56%) of patients diagnosed as SBP received the suitable antibiotic within 6 hrs of the test result (Bassett and Volk, 2011).

Primary prophylaxis against SBP should be performed in cirrhotic Patients with a low amount of protein in the ascitic fluid (< 15 g/l) (Flemming et al., 2012). Quinolones can reduce the risk of development of SBP in susceptible patients, but the effect on mortality is only marginal (Terg et al., 2008).

Findings of the present study demonstrated that, 97.6% of patients received prophylactic antibiotics as a primary prophylaxis against nosocomial acquired SBP during hospitalization. Saab et al. had some results near to us; they found that 65% of patients recommended for primary prophylaxis against SBP received a prophylactic antibiotic (Saab et al., 2006).

This is in contrast with Goel et al. who demonstrated that primary prophylaxis is offered in only 2 hospitals (18.2%) based on ascitic fluid albumin concentration of <20 g/L from total of 18 hospital included in their study (Goel et al., 2014).

In this study there were a prophylactic measures to avoid variceal bleeding including primary and secondary prophylaxis either by NSBBs or EGD. There were 44.7% of patients had varices were taking NSBBs and 6.7% performed EGD as a primary prophylaxis while 55.3% were taking NSBBs and 93.3% performed EGD as a secondary prophylaxis. Also, 85.1% of patients with GITB received a prophylactic antibiotic during hospitalization.

Paula et al (Paula et al., 2014). found that 27.6% of patients were taking NSBBs and 24.3% was performing EGD as a primary prophylaxis while 72.4% were taking NSBBs or performing EGD as a secondary prophylaxis. Also, 37.7% of patients with GITB received a prophylactic antibiotic during hospitalization (Paula et al., 2014).

Bacon et al. found that only 49% of patients with bleeding esophageal varices received prophylactic antibiotics (Bacon et al., 2010).

The combination of liver ultrasound and serum alpha fetoprotein (AFP) is important in HCC surveillance (Singal et al., 2009). The recommended interval between HCC surveillance tests is 6–12 months. This interval is based on the median doubling time of HCC, which is estimated to range between 80 and 117 days (Kubota et al., 2003; Okada et al., 1993).

Eimile et al. found that approximately half of Primary Care Providers (52%) reported using ultrasound or measurements of  $\alpha$ -fetoprotein in surveillance of HCC; 96% said that this combination was effective in reducing HCC-related mortality. However, many providers incorrectly believed that clinical examination (45%) or levels of liver enzymes (59%) or  $\alpha$ -fetoprotein alone (89%) were effective surveillance tools (Eimile et al., 2014).

In the present study there were 50.8% of all patients screened for HCC, 8.9% of those screened patients was screened by both ultrasonography and AFP estimation while 91.1% was screened by ultrasound only. While Davila et al. Found only 28% of patients received HCC screening. 22.7% received abdominal ultrasound with AFP estimation, 36.4% by AFP only and 22.8% by ultrasound only (Davila et al., 2007).

Emilie et al. found that approximately half of primary care providers (52%) reported using ultrasound or measurements of AFP in surveillance of HCC, 96% said that this combination is effective in reducing HCC related mortality (Emilie et al., 2014).

The approach to patients with suspected hepatic encephalopathy involves identifying and treating precipitating causes and initiating ammonia-lowering therapy. The two major therapies used to reduce circulating NH<sub>4</sub> are non-absorbable disaccharides and rifaximin (Sharma et al., 2009).

Sharma et al. found lactulose is effective in the secondary prophylaxis of hepatic encephalopathy in the outpatient setting (Sharma et al., 2009). While the study published by Bass et al. showed that rifaximin plus lactulose is more effective than lactulose alone in the secondary prophylaxis of hepatic encephalopathy (Bass et al., 2010). In the present study 100% of patients with hepatic encephalopathy received oral disaccharides or rifaximin as treatment and secondary prophylaxis.

In the present study 100% of patients with hepatic encephalopathy were subjected to maximally 72 hrs of protein restriction.

In the present study there were 69% of patients subjected to at least one hospitalization. Volk et al. Found that up to 69% of patients with decompensated cirrhosis required at least one non-elective hospital readmission within a median time of about two months to the first admission (Volk et al., 2012).

**CONCLUSION**

From the results we can conclude that variceal bleeding is the major presenting complication in our patients with liver cirrhosis. Secondary prophylactic endoscopic therapy that delay bleeding and follow up sclerotherapy was done in 93.3% of those cases. On the other hand fairly low standard care with primary prophylaxis (6.7%) for varices was presented to those cases this is in comparison with Paula M et al who found 24.3% for upper endoscopy for varices screening to 72.4% for secondary prophylaxis for variceal bleeding. As regarding the patients with hepatic encephalopathy the care was standard 100%. As regarding patients with HCC 78.5% of cases received the indicated screening and 62.5% of patients with HCC received the recommended treatment.

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