



An assessment of abnormal lipid profiles (dyslipidemia) among cirrhotic patients and its association with age and gender

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General Note



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ABSTRACT

Objective: The purpose of this research was to study patients with liver cirrhosis who presented an abnormal lipid profile at Tay Nguyen General Hospital, Daklak province, Vietnam. **Material and Methods:** Our cross-sectional research was conducted at Tay Nguyen General Hospital (Medicine Department), Daklak province, Vietnam. The research was conducted over eight months from February to September of 2017. In the course of our research, we studied the lipid profiles of 110 patients with liver cirrhosis. **Results:** The patients in the study ranged in age from 15 to 65 years, with a mean age of 39.77 ± 12.84 years. Of the total, 60 (54.55%) were

15-40 years old, and 50 (45.45%) were 41-65 years old. Both the age group of 15-40 years and 41-65 years included 88 and 43 patients with dyslipidemia. Of the total, 80% of the patients aged 15-40 had dyslipidemia and 86% of the patients aged 41-65 had dyslipidemia. There was a significant statistical correlation between dyslipidemia and age ($P=0.2310$) and between dyslipidemia and gender ($P=0.6255$). *Conclusion:* Our research concluded that there was a higher occurrence of dyslipidemia in patients with liver cirrhosis. Whereas, an insignificant correlation of dyslipidemia was present between gender and age of the patients.

Keywords: Liver Cirrhosis, Child-Pugh Classification, Dyslipidemia, Hepatitis B (HBV), Lipid Profile, and Hepatitis C (HCV).

1. INTRODUCTION

Liver cirrhosis is a progressive fibrosis in which regenerative modules are formed, and architectural distortion takes place (Roesch-Dietlen et al., 2008). Cirrhosis is often deadly at onset and responsible for a high rate of mortality in the United States of America (U.S.). Alcoholic liver disease and chronic hepatitis C virus (HCV) are leading factors of cirrhosis (Shimizu et al., 2013). Chronic HCV infection is common in almost every region of the world, affecting 200 million people representing 2-3% of the global population (EL-Kabbany et al., 2013). In Asia, 3.5% of the population is affected; while 1.3% of the U.S. population is affected (Abbasi et al., 2012). Liver cirrhosis is an offshoot of chronic alcoholic liver disease, which causes 40% of all deaths worldwide (Roesch-Dietlen et al., 2008).

Based on research conducted in 2011, HCV is related to the occurrence of cirrhosis among 61.66% of patients worldwide. Moreover, hepatitis B virus (HBV) leads to cirrhosis in 18.94% of patients, and alcoholic liver disease is attributable to 3.2% of patients with liver cirrhosis (McCormick, 2011). Affected individuals require proper disease management, and often result in frequent hospital visits and high costs to the patient. The Child-Turcotte-Pugh (CTP) Calculator estimates the severity of cirrhosis and predicts survival rates among cirrhotic patients (Ullah et al., 2012; Ghany & Hoofnagle, 2008). Abnormalities in the lipid profile are also common in cirrhotic patients. The liver plays a vital role in synthesis, lipid metabolism, clearance, and transport (Ghany & Hoofnagle, 2008). Patients with severe liver dysfunction also present an abnormal lipid profile; chronic liver disease (CLD) patients present low levels of cholesterol and triglycerides (Jiang et al., 2013).

Several international studies focus on the incidence of dyslipidemia among cirrhotic patients, but there remains a scarcity of locally available literature. Our research was conducted on patients with liver cirrhosis who presented an abnormal lipid profile. We hope this effort will ultimately benefit the forthcoming disease management protocols.

2. MATERIAL AND METHODS

Our cross-sectional research was conducted at Tay Nguyen General Hospital (Medicine Department), Daklak province, Vietnam. The study was conducted over eight months from February to September of 2017 in the hospital's Medicine Department. In the course of our research, we studied 110 liver cirrhosis patients with a focus on their lipid profiles. We did not include patients with a co-morbid disease, hypertension, diabetes mellitus, ischemic heart disease, intake of lipid reducing/hepatotoxic drugs, a body mass index (BMI) above 30, end-stage renal disease, or acute hepatitis. We documented demographic data, including the patient name, address, gender, and age. We retrieved and submitted for laboratory analysis blood samples for INR, PT, bilirubin, albumin, and fasting lipid profile after overnight fasting for more than twelve hours. A consulting radiologist performed ultrasonography for every patient. Statistical analysis was conducted using IBM SPSS Software and generated categorical data such as frequencies, percentages, and average values. The protocol of this study was approved by Hospital with the number of 105/BV-HDDD.

Table 1 Stratification of Dyslipidemia

Dyslipidemia	Number	Percentage
Yes	88	80
No	22	20

3. RESULTS

The patients in the study ranged in age from 15 to 65 years, with a mean age of 39.77 ± 12.84 years. Of the total, 60 (54.55%) were 15-40 years old, and 50 (45.45%) were 41-65 years old. Both the age groups of 15-40 years and 41-65 years included 88 and 43 patients with dyslipidemia. Of the total, 80% of the patients aged 15-40 had dyslipidemia and 86% of the patients aged 41-65 had

dyslipidemia. There was a significant statistical correlation between dyslipidemia and age ($P=0.2310$) and between dyslipidemia and gender ($P=0.6255$). Detailed outcomes for gender, age, and dyslipidemia are shown in Tables 1-2 and figure 1.

Table 2 Stratification of Gender and Age

Age and Gender		Yes		No		Total		P
		n	%	n	%	n	%	
Age	15-40 Years	45	70.0	15	25.0	60	54.6	0.2310
	41-65 Years	43	86.0	7	14.0	50	45.5	
	Total	88	80.0	22	20.0	110	100.0	
Gender	Male	53	77.9	15	22.1	68	61.1	0.6255
	Female	35	83.3	7	16.7	42	38.2	
	Total	88	80.0	22	20.0	110	100.0	

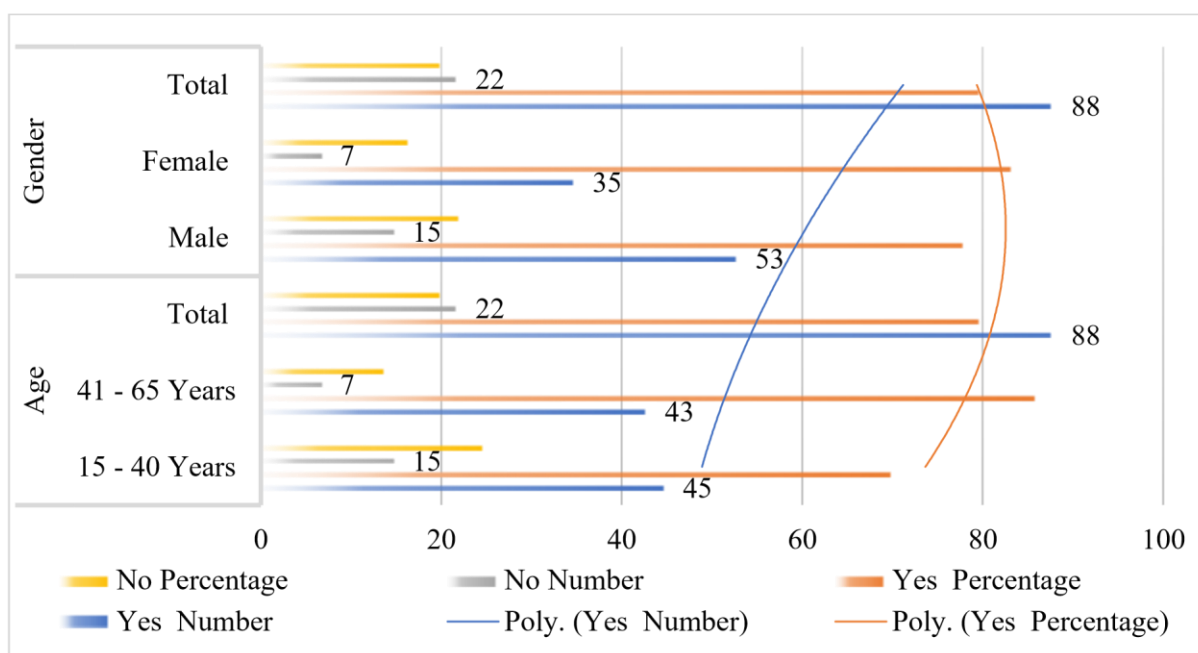


Figure 1 Stratification of Gender and Age

4. DISCUSSION

The patients in the study ranged in age from 15 to 65 years, with a mean age of 39.77 ± 12.84 years. Of the total, 60 (54.55%) were 15-40 years old, and 50 (45.45%) were 41-65 years old. Both the age brackets of (15-40) years and (41-65) years included 88 and 43 patients with dyslipidemia. Of the total, 80% of the patients aged 15-40 had dyslipidemia and 86% of the patients aged 41-65 had dyslipidemia. There was a significant statistical correlation between dyslipidemia and age ($P=0.2310$) and between dyslipidemia and gender ($P=0.6255$).

Literature about liver disease and its association with lipid profile is scarce. Dyslipidemia reported in our research is consistent with the outcomes presented by Roesch-Dietlen et al. (2008) (Halsted CH, 2004). Roesch-Dietlen et al. (2008) reported the incidence of dyslipidemia as 76.92% (Halsted CH, 2004). Shimizu said a reduced incidence of dyslipidemia at 61% in his study of patients in the U.S (Bacon, 2004). EL-Khabbany et al. (2013) also studied cirrhotic patients for abnormal lipid profiles and reported the frequent onset of dyslipidemia in patients with CLD. In a total of 40 CLD patients, there were eight with hyper-cholesterol (20%), 13 with hypertriglyceridemia (32.5%), 17 with low HDL (42.5%), and nine patients with high LDL (22.5%) (Garcia, 2012). Abbas and his colleagues also reported the frequent occurrence of hypocholesterolemia in patients with decompensated CLD. They also reported a correlation with the Child-Turcotte-Pugh (CTP) Calculator classification. Both levels declined in proportion to that of liver dysfunction. These outcomes also reflected higher levels of hypo-cholesterol in males than females (Boston & Mahmood, 2012).

Patients with cirrhosis need to visit the physician frequently may have multiple hospital admissions, be burdened with high costs, and confront the possibility of related complications. Proper management depends on the type of liver damage, the severity of the damage, and disease diagnostic. The Child-Turcotte-Pugh (CTP) Calculator classification may also play a role in the evaluation of cirrhosis (Pawlotsky, 2012). The frequency of CLD was frequently reported in the community. Dyslipidemia is one of the factors contributing to mortalities among cirrhotic patients. Mortality and morbidity are controllable through proper and timely diagnosis and initiation of managed therapy. Further research will ultimately increase our understanding of the association of abnormal lipid profiles with CLD.

5. CONCLUSION

This research observed a higher incidence of dyslipidemia in patients with liver cirrhosis. The correlation of dyslipidemia to the gender and age of the patients was insignificant. Screening of liver cirrhosis by early lipid tests is proposed so that manager has the right policies for reducing the burden of the disease as well as a prerequisite for investigating factors associated with liver cirrhosis.

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Conflicts of Interest: The authors declare no conflict of interest.

List of abbreviations

BMI - body mass index; INR - international normalized ratio; HBV - hepatitis B virus; HCV - hepatitis C virus; PT - prothrombin time.

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