Global Journal of Scientific Researches
Available online at gjsr.blue-ap.org
©2016 GJSR Journal. Vol. 4(5), pp. 69-73, 31 October, 2016
E-ISSN: 2311-732X

Evaluation of correlation between steatosis and fibrousis in liver biopsy of patients with hepatitis C

Neda Nasirian[1*], MojganKarbakhsh davary[2] and Fatemeh Hagimanoochehri[3]

1- Dept of pathology of Velayat hospital, Quazvin University of medical Science, Qazvin, Iran.
2- Assosiated professor of Tehran universityTehran, Iran.
3- Dept of pathology of Booali hospital, Quazvin University of medical Science, Qazvin, Iran.

Corresponding Author: Neda Nasirian

Received: 3 October, 2016 *Accepted: 11 October, 2016* *Published: 31 October, 2016*

A B S T R A C T

Background and objectives: Presence of association between statosis and necroinflammatory index also fibrousis in liver biopsy of patients with hepatitis C is controversial between different resources and in this study,we want to evaluate correlation between steatosis and fibrousis. **Materials and methods:** We studied 97 liver biopsy slides of patients with hepatitis c which have been refered to Booali hospital and determined the prevalence of steatosis also necroinflammatory index and stage of fibrosis in each case and presence of relationship between steatosis and fibrousis was analysed by independent sample T student test using SPSS version 10 and P value less than. /.5 considered significant. **Results:** The prevalence of steatoisis in patients with hepatitis c was 55/7%.There was meaning full correlation between presence of steatosis and stage of fibrousis also necroinflammatory grade. **Conclusion:** According to this study which confirm some other previous studies,presence and severity of steatosis in a HCV infected patient fibrouseprogresion.

Keywords: *Steatosis, fibrousis, Necroinflammatoryscoring, grade, stage.*

INTRODUCTION

The liver is an organ that in many vital activities, such as fighting an infection, stop the bleeding, purify the blood of toxins and drugs, and the role of energy storage in the body. Hepatitis is a disease of the liver was swollen, and that disrupts the activity. This disease is caused by several reasons. Hepatitis C is one of the causes. (18)

Symptoms of Hepatitis C:

Some patients in the early hepatitis C rials flu-like symptoms, fever, fatigue, nausea, vomiting, anorexia and abdominal pain are.

Characteristic symptoms of this disease include:

- Dark urine
- Clear stool
- Yellowing of the skin and eyes

about 80% of chronic hepatitis C infection remains in the body.

Many cases of infection with hepatitis C have no symptoms.

Transmission of hepatitis C:

Hepatitis C infection is mainly a result of contact with infected blood, is done in the following ways:

* Common usage of contaminated sharp instruments such as needles and syringes, razors and toothbrushes

Most cases of hepatitis C infection related to the sharing of needles and syringes people who attempted to inject their drugs.

* Tattoo, cupping, ear piercing, medical and dental services in an uncertain and contaminated sites, or any other act that leads to perforation of the skin with contaminated instruments and is non-sterile.
* Dialysis and transplant organs infected with contaminated instruments
* Multiple blood transfusion or blood products infected (today donated blood control contamination in this way is very small.)
* Unprotected sexual contact with an infected person, especially if one of the parties to be with other sexually transmitted diseases (risk of transmission in this way is very small.)

* Birth from an infected mother Hepatitis C
Most cases of hepatitis C infection related to the sharing of needles and syringes people who attempted to inject their drugs.

Preventing Hepatitis C:
* Do not ever injecting drugs.
If you use these products, do not continue to treat to apply.
If you can not leave to you, do not share needles and syringes and other instruments.
* If you have contact with another person's blood:
* the gloves.
* Use your own equipment:
Toothbrush, razor, knife or any personal device that may be contaminated blood, not to share.
* In case of tattooing, cupping or any other measures that lead to perforation of the skin:
Disposable or sterilized instruments sure.
* Avoid unprotected sexual contact and suspicious.

Hepatitis C patients, according to statistics, over 170 million people worldwide are living with the disease is associated with general signs of disease. Symptoms such as nausea, diarrhea and general weakness. Yellowing of the skin or whites of the eyes yellow in hepatitis C but not visible. This is one of the significant differences in the types of hepatitis, other types of hepatitis.(2)

Dormancy caused to the arrival of the virus to start its activity may take between two to 20 months. It is possible that after the entry of hepatitis C virus immune system is able to withstand time. White blood cells floating in the blood, which can contain viruses and bacteria devour and digest them on their own. Hepatitis C virus can remain dormant for some time for the white blood cells but the virus can be activated for unknown reasons. Sometimes simple is similar to a cold virus activity. Because hepatitis C is often associated with jaundice someone does not affect their disease. But the element that the level of liver enzymes indicate liver blood goes up sharply, indicating that the imbalance in the liver and the beginning of the disease.ne of the viruses in this group.

Course of illness in patients with chronic hepatitis C is faster and more severe damage from it. Among the collateral damage of this disease, joint pain and loss of kidney tissues. Unfortunately, more than 80% of hepatitis C leads to cirrhosis of the liver. With the rapid diagnosis and the use of adjuvant drugs and inhibitors can prevent the destruction of liver tissue and patient controlled to some extent. (8)

Are highly infectious hepatitis. The main route of transmission of hepatitis C through direct contact with infected blood and infected. Unfortunately, these patients showed good record in prison injection drug users Mydhd. Costly and difficult to treat patients. The most important way to prevent transmission of the virus.

Hepatitis C vaccine has not been discovered to date. But vaccination against Hepatitis B Hepatitis C body more than 75% compared to the safer.

In total, 100 million people worldwide are infected with hepatitis c. Followed by chronic inflammation of the liver, about 20 to 30 percent of patients eventually develop cirrhosis of the liver. The best strategy in these patients to prevent disease progression to end-stage liver disease, hepatitis c is control or destruction of the virus Viral hepatitis has existed since the dawn of man. Estimated prevalence of hepatitis in about 3 to 5 percent. Chronic hepatitis c in patients with moderate to severe liver with F. Antiviral therapy is strongly recommended. (16)

In addition, viral, it is generally believed that host factors crucial role in the host response to viral hepatitis infections play. The hepatitis Cis a major cause ofchronic liver disease world wideinfectingaprroximately 170 milion people(17).Pathologic changes of liver are different from mild liver enzyme elevation to complete cirrhosis.Liver damage is considered to have immune mechanism .Hepatic steatosis is a common pathologic feature of hepatitis C the reported prevalence of steatosis in Western countries ranges from 34.8-81.2%(1).Steatosis is often(80%) mild and involved less than 30% 0f hepatocytes (17).It is contravercial that wethersteatosis has influence on the progresion of fibrosis or not.Among 11 performed studies,eight found an association between the presencec of steatosis and the stage of fibrosis but other studies couldnot prove such a relationship(10).In a study ,on 755 cases of liver biopsy of patients with hepatitis C ,steatosis was independetly associated with fibrousis.(15)

Material and method

This study is cross sectional and is performed on 97 liver biopsy specimen from patients with hepatitis which have reffered to Qazvin booali hospital in 1384-1390.

Liver biopsies were processed for paraffin embedding,stained with haematoxylin and eosin (1), and Trichrom also Reticulin staining was used for the evaluation offibrosis. Modified Knodell's scoring system which is proposedbyIshaket al., was used to evaluate degree of necro-inflammation and fibrosis.

Presence and severity of steatosis were also evaluated.Then correlation between stage of fibrousis and necroinflammatory grade and presence and severity of steatosis were analysed by independent sample T student test using SPSS version 10 and P value less than ./.5 considered significant.

All of informations areconfidential and names of patients don't be revealed then there isn't any ethical problem.(6)

Our limitation for study were we could not found some old slides which we deleted them from study also we werenot able to determined all compounding factores for steatosis because of long duration of study.(7)

Results

Of our cases 74.2 %(n=72) were male and 25.8% were female(n=25). The mean age of our patients was 40.87±12.02 (median=39). Distribution of cases according to stage is shown inTable 1.

Table 1. Frequency distribution of cases according to stage at presentation

stage	Number	percent
0	10	10.3
1	41	42.3
2	27	27.8
3	9	9.3
4	6	6.2
5	4	4.1
6	0	0
Total	97	100

Mean age of cases were significantly different among five stage groups (P=0.016). Nevertheless, Post Hoc tests did not show specific differences amongst groups possibly due to multiple categories.(14)

Table 2. Frequency distribution of cases according to gender and stage

Gender		Male	Female	Total
Stage	0	6(60%)	4(40%)	10(100%)
	1	34(82.9%)	7(17.1%)	41(100%)
	2	20(74.1%)	7(25.9%)	27(100%)
	3	6(66.7%)	3(33.3%)	9(100%)
	4	4(66.7%)	2(33.3%)	6(100%)
	5	2(50%)	2(50%)	4(100%)
Total		72(74.2%)	25(25.8%)	97(100%)

We classified grades of necroinflammation of Isak into grades 1-4(minimal),
5-8(mild), grades 9-12(moderate) and grades 13-18(severe) according to ….(19)

Of the patients, 24.7% were in grades 1-4(minimal), 52.6% in grades 5-8(mild), 18.6% in grades 9-12(moderate) and 4.1% in grades 13-18(severe).

We also classified steatosis to mild (less than 30% of hepatic tissue),moderate(30-60%) and sever (mote than 60%) of liver tissue biopsy specimen. Steatosis was observed in 55.7 %(n=54). In fact, 46 cases had mild steatosis (47.4%), 5 had moderate (5.2%) and 3 had severe (3.1%) steatosis. The patients with steatosiswere significantly older than others (45±12.5 vs. 35.8±9.3 years, P<0.001). No significant association was observed between steatosis and gender: 64% of males vs. 52.8% of males had steatosis (P=0.33). If we consider steatosis in its three categories, the distribution within gender can be demonstrated in Table3.

Table 3. Frequency distribution of cases according to gender and steatosis

	Steatosis			Total
	No Steatosis	Mild	Moderate Severe	

Gender	Male	34(47.2%)	33(45.8%)	4(5.6%)	1(1.4%)	72(100%)
	Female	9(36%)	13(52%)	1(4%)	2(8%)	25(100%)
Total		43(44.3%)	46(47.4%)	5(5.2%)	3(3.1%)	97(100%)

As demonstrated in Table 4, a significant relationship was observed between steatosis severity and grade (P value for Fisher's exact test: 0.002).

Table 4. Frequency distribution of cases according to grade and steatosis

		Steatosis				Total
		No Steatosis	Mild	Moderate	Severe	
Grade	Minimal	17(70.8%)	7(29.2%)	0(0%)	0(%)	24(100%)
	Mild	21(41.2%)	28(54.9%)	1(2%)	1(2%)	51(100%)
	Moderate	3(16.7%)	9(50%)	4(22.2%)	2(11.1%)	18(100%)
	Severe	2(50%)	2(50%)	0(0%)	0(0%)	4(100%)
Total		43(44.3%)	46(47.4%)	5(5.2%)	3(3.1%)	97(100%)

Similarly, the association between stage and steatosis was statistically significant (P=0.008) (Table 5).

Discusion:

In this study, the prevalence of steatosis was 54% which was 64% in a study performed in Italy(17) and 46% according to study in a Pakistan.(4)

83 % of patients with steatosis had mild form and it has been 80% according to performed Italian studies.(17)

In our study, there is a meaningfull relationship between steatosis and severity of fibrousis also necroinflammatory grade.(5) In some previouse cross sectional studies,the degree of necroinflammatory damage had been corelated with steatosis but not all studies have been able to confirm these findings. In a study including 290 patients with chronic hepatitis C, it was found by univariate, but not multivariate analysis an associationbetween steatosis and high stage of fibrosis.(17)

In fact, steatosis could be a marker but not a cause of disease progression. The frequent association between the presence of steatosis and the grade of necroinflammation may suggest that steatosis is a marker of necroinflammation that, in turn, is a marker of fibrosisprogression. The mechanism responsible for this assosiation is unknown.(3) In vitro studies the HCV core protein can cause oxidative stress HCV infection is associated with cytokine productions that enhance inflammation led to increase lipid peroxidation. (13) In addition, steatosis of any cause can be associated with thedevelopment of inflammatory changes in the setting ofoxidative stress. Moreover, HCV infection is associated withincreased production of cytokines .(12) It can also hypothetize that steatosis in a consequence of cell injury and necroinflammation rather than being the direct cause of worsening offibrousis.(17)Although some have proposed noninvasive markers for the assessment of fibrosis, liver biopsy still be preferred as the gold standard because this is the only way by which along with fibrosis one can adequately assess the degree and histological patterns of hepatic steatosis.(4)

CONCLUSIONS

Hepatitis C is a common disease in the world which prevalence is increasing in our country and steatosis is a common hepatic problem in HCV infected patients .According to this study which confirm some other previous studies,presence and severity of steatosis in a HCV infected patient , correlate with fibrouseprogresion.and its stage.

Then close observation and followup of HCV infected patients with liver biopsy is usfull for evaluation of response to treatment also prognosis and is recommended.

Acknowledgement

This study is performed in Qazvin Booali hospital pathology center on liver biopsy specimens which evaluated by two pathologist (Authors) and was funded by Qazvin univercity medical science.

REFERENCES

1- Adinolfi LE, Durante-Mangoni E, Zampino R, Ruggiero G.Review article: hepatitis C virus associated steatosispathogenic mechanisms and clinical implications. Aliment PharmacolTher2005; 22:52-5.

2- Adinolfi LE, Gambardella M, Andreana A, et al.: Steatosis accelerates the progression of liver damage of chronic hepatitis C patients and correlates with specific HCV genotype and visceral obesity. Hepatology 2001, 33:1358–1364.

3- Asselah T, Boyer N, Guimont MC, et al.: Liver fibrosis is not associated with steatosis but with necroinflammation in French patients with chronic hepatitis C. Gut 2003, in press.Controversy about the role of steatosis in fibrosis progression is reported.

4- Alia Zubair1, Azhar Mubarik1, Shahid Jamal1, Adeel Arif1 and Dilshad Ahmad Khan2: Correlation of Steatosis with Fibrosis and Necro-inflammation inChronic Hepatitis C Infection in the Absence of Confounding Factor. Journal of the College of Physicians and Surgeons Pakistan 2009, Vol. 19 (7): 417-420
5- Castéra L, Hézode C, Roudot-Thoraval F, et al.: Worsening of steatosis is an independent factor of fibrosis progression in untreated patients with chronic hepatitis C and paired liver biopsies. Gut 2003, 52:288–292.
6- Czaja AJ, Carpenter HA, Santrach PJ, Moore SB: Host- and disease-specific factors affecting steatosis in chronic hepatitis C. J Hepatol 1998, 29:198–206.
7- GamalShiha [1] and KhaledZalata[1]Ishak versus METAVIR: Terminology, Convertibility and Correlation with Laboratory Changes in Chronic Hepatitis C, Internal medicine department & pathology department, Mansoura faculty of medicine,liver biopsy ,p156
8- Egypt.
9- Hourigan LF, Macdonald GA, Purdie D, et al.: Fibrosis in chronic hepatitis C correlates significantly with body mass index and steatosis. Hepatology 1999, 29:1215–1219.
10- Mehta SH, Brancati FL, Strathdee SA, et al.: Hepatitis C virus infection and incident type 2 diabetes. Hepatology 2003, 38:50–56.
11- Mihm S, Fayyazi A, Hartmann H, Ramadori G: Analysis of histopathological manifestations of chronic hepatitis C virus infection with respect to virus genotype. Hepatology 1997, 25:735–739.
12- Monto A, Alonzo J, Watson JJ, et al.: Steatosis in chronic hepatitis C: relative contributions of obesity, diabetes mellitus, and alcohol. Hepatology 2002, 36:729–736.A total of 297 patients with chronic hepatitis C were analyzed for host and viral factors related to steatosis and fibrosis.
13- Neuman MG, Benhamou JP, Malkiewicz IM, et al.: Kinetics of serum cytokines reflect changes in the severity of chronic hepatitis C presenting minimal fibrosis. J Viral Hepat 2002, 9:134–140.
14- Okuda M, Li K, Beard MR, et al.: Mitochondrial injury, oxidative stress, and antioxidant gene expression are induced by hepatitis C virus core protein. Gastroenterology 2002, 122:366–375.
15- Poynard T, Ratziu V, McHutchison J, et al.: Effect of treatment with peginterferon or interferon alfa-2b and ribavirin on steatosis in patients infected with hepatitis C. Hepatology 2003, 38:75–85.Assessed the effect of treatment on viral steatosis. In patients with HCV genotype 3 infection, sustained disappearance of the virus is associated with reduction of steatosis.
16- Rubbia-Brandt L, Fabris P, Paganin S, et al.: Steatosis affects chronic hepatitis C progression in a genotype-specific way. Gut 2003, in press.A total of 755 patients with chronic hepatitis C were studied and only viral steatosis (HCV genotype 3) was found to be associated with fibrosis progression.
17- Serfaty L, Andreani T, Giral P, et al.: Virus induced hypobetalipoproteinemia: a possible mechanism for steatosis in chronic hepatitis C. J Hepatol 2001, 34:428–434.
18- Tarik Asselah, MD, Nathalie Boyer, MD, and Patrick Marcellin, MD* Service d'HÈpatologie, HÙpitalBeaujon, Clichy, France:Steatosis in Hepatitis C: What Does It Mean?Current Hepatitis Reports 2003, 2:137;144
19- Thio CL, Goedert JJ, Mosbruger T, Vlahov D, Strathdee SA, O Brien SJ, et al. An analysis of TNF- genepromoter polymorphisms and haplotypes with natural clearance of hepatitis C virus infection. Genes and Immunity 2004;5(4):294-300.
20- Westin J, Nordlinder H, Lagging M, et al.: Steatosis accelerates fibrosis development over time in hepatitis C virus genotype 3 infected patients. J Hepatol 2002, 37:837–842.