HEPATITIS C VIRUS FREQUENCY IN PATIENTS OF HEMODIALYSIS

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SUMMARY : In the course of this study, we have investigated the frequency of anti-HCV in patients under continuous hemodialysis therapy in recent years by the hemodialysis unit of Medical Faculty of Gazi University.

The intent of this article was to investigate as to whether there exists a correlation between anti-HCV positivity and the number of blood transfusions, serum ALT levels, number and duration of hemodialysis.

In conclusion, we found a correlation between the frequency of HCV anticore and number of hemodialysis. But a positive relation between the frequency of HCV anticore and the other parameters was not observed.

***Key Words** : Anti HCV, Hemodialysis.*

INTRODUCTION

In 1974, it was noticed that there would be another virus other than Hepatitis A and B viruses which may produce viral hepatitis, accompanying with blood transfusions. The identificiation of cDNA clone 5-1, 1 which encoded at least one epitope that specifically identified antibodies in serum from patients with blood transmitted Non A, Non B Hepatitis (NANBH) was reported in 1989 by scientists at the Chiron Corporation in California (5). This clone was derived from a virus which was named Hepatitis C virus (5). The virus in length of 30-60 nm inactivated by cloroform, formalin, B-propiolactone and UV Rays. It sustains its living for 5 minutes and 10 hours under the heat of 100°C and 60°C respectively (14). The hepatitis C virus included in the flavi and pesti virus families is likely one of viruses called as Non A - Non B viruses (14). It is contaminated parenterally. Two major sources of parenterally transmitted NANBH cases are transfusions of blood or blood products and intravenous drug abuse (7). Furthermore vertical transmission has also been documented (16). The efficacy of hetero sexual transmission seems to be rather low as compared with that of hepatitis B virus (1). Intrafamilial spread may also occur (4). The possible transmission of HCV by a human bite has been reported in one case (18). Organ transplant recipients are also at high risk of acquiring NANB hepatitis. A 6.5 % incidence of acute NANB hepatitis after transplantation has been reported and 71 % of cases of chronic liver disease in these patients have been attributed to NANB hepatitis (8). In addition, NANB hepatitis plays a significant role in the development of chronic hepatitis in dialysis units since 15 % of patients

have elevated ALT in the absence of infection with any other hepatotropic virus (10). Perinatal transmission and sporadic hepatitis has been also documented rarely (8).

In 80 % of the cases, the incubation time of HCV infection takes about 5 to 12 weeks (14). Most patients with acute hepatits C infection are asymptomatic and only some 10-15 % will become icteric. The serum ALT levels are not too high. The disease may be totally cured when the liver enzymes have turned to normal functioning. Nevertheless, 50 % will progress to chonic liver disease with fluctuating transaminase levels over decades (12, 14). Chronic NANB hepatitis is not a benign disease. Of patients with posttransfusion hepatitis-NANB 50 % to 60 % go on to develop chronic hepatitis and 20 % of those will progress to cirrhosis. Same patients die from hepatocellular carcinoma (3).

Because of the aforesaid characteristics of C hepatitis, it is considered necessary to conduct such a study for hemodialysis patients being at increased risk.

MATERIALS AND METHODS

In the entire course of the study ranging from 2 months to 5 years, 44 patients in total, 14 of whom were women (31.8 %), age of whom were ranging from 19 to 65 years were included in this study. The hemodialysis units stuff in strength of 12 were subjected to HCV anticore testing. ELISA II method was used in determination of HCV anticore (2, 6). In the evaluation of the data, Mann Whitney U test was used.

RESULTS

1. The HCV anticore of 13 patients (29.5 %) of 44 patients were positive. None of the hemodialysis stuff had positive (+) HCV anticore. The patients with HCV anticore positive and negative have been subjected to hemodialysis therapy for a period of 88.15 weeks and 61.13 weeks respectively. There was no correlation between the time of hemodialysis and positivity of HCV anticore.

Anti HCV (+)	Anti HCV (-)	
X + SD	X + SD	P
88.15 + 52.60	61.13 + 71.98	P>0.05

2. The number of blood transfusions were 2.69 and 2.23 to those having positive and negative HCV anticore respectively. The increase of blood transfusion number has not raised the number of positive HCV anticore cases.

Anti HCV (+)	Anti HCV (-)	
X + SD	X + SD	P
2.69 + 2.21	2.23 + 2.35	P>0.05

3. The number of hemodialysis were 212.69 and 141.08 to those having positive and negative HCV antibodies respectively. The number of hemodialysis and positive HCV antibodies had an interrelation.

Anti HCV (+)	Anti HCV (-)	
X + SD	X + SD	P
212.69+133.97	141.08+174.54	P<0.05

4. Only 38.5 % of HCV antibody positive cases have high ALT levels. In all cases of which HCV antibodies were positive, the ALT levels were not high. In eight cases that ALT levels were high, the reason of that was not known. But in these cases, the presence of hepatitis C infection can not be excluded. In an early study seroconversion for anti-HCV c100-3 appearad rather late (means, 15 weeks after onset of hepatitis) and for some patients not until after 1 year after onset of hepatitis (18).

Anti normal	ALT high	
HCV (-) 23 (74.2 %)	8 (25.8 %)	P
HCV (+) 8 (61.5 %)	5 (38.5 %)	P>0.05

DISCUSSION

Prevalence studies of anti - HCV antibodies in dialysis centers around the world have shown relatively low rates of HCV infection. Although a wide range of infected patients (1 to 33 %) have been reported, the majority of studies have found prevalences of 10 to 20 % (8). The prevalence of anti - HCV antibodies is reported to be 20 % in Spain (8), 5.5 % in Germany (13), 17.3 % in Italy (9) and 15.7 % in USA (20).

In our study, the prevalence of antibodies to HCV was 29.5 %. None of the stuff of hemodialysis had positive HCV antibodies.

This situation in the other Hemodialysis centers in Turkey (Congress of Nephrology, Ürgüp, Abstract, 1-4 November 1992) :

Hemodialysis Center	The prevalence of anti HCV (%)
Ankara University, faculty of medicine	18.28
Akdeniz University, faculty of medicine	32.70
Erciyes University, faculty of medicine	32.50
Hacettepe University, faculty of medicine	60.00
19 Mayıs University, faculty of medicine	79.10

Reasons for the different rates could be the different anti-HCV prevalence in blood donars, variations in the number of transfused blood units and incidence of nasocomial infections (3). Although some studies have found a relationship between anti HCV and antecedent of blood transfusion (7, 11, 15), others have failed to find any correlation (9, 19).

Baur et al (4) researched the prevalence of antibodies to hepatitis C virus in kidney transplant patients and they noticed that hemodialysis and / or transfusion of blood or blood components implies a high risk of HCV infection. An increase of transfusion volume above 5 units of blood raises the risk of HCV infection by 4.1 times.

According to Zoldis et al (20) Hemodialysis alone does not seem to place a patient at risk of HCV infection.

In other study, 9 to 18 % of Japanese patients on chonic hemodialysis who had never received blood have been reported as anti HCV positive (15, 19).

In accordance with the results of our study, it was observed that the positivity of anti-HCV antibodies has no relation with blood transfusions. This study has indicated that the transaminase levels were able to keep their normal status.

Finally, HCV infection is a major problem in hemodialysis units. More studies are needed to define the transmission mechanisms of HCV in hemodialysis units.

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REFERENCES

1. Alter M, Coleman P, Alexandr J, et al : Importance of heterosexual activity in the transmission of hepatitis B and non A, non B hepatitis. JAMA 1989; 262: 1201-1205.
2. Avella F, Irlando A, Scarcariello G, Lovino R : On the positivity of the test for anti - HCV consideration in dialysed patients. Nephron 1992; 61 : 341.
3. Baur P, Daniel V, Pomer S, Schevrlen H, Opelz G, Roeleke D : Hepatitis C virus antibodies in patients after kidney transplantation. Ann Hemotol 1921; 62 : 68-73.
4. Brian JGP, Milford EL, Kirkman R, Levey AS : Transmission of hepatitis C virus by organ transplantation. The New Engl J Med 1991; 15 : 454-460.
5. Choo Q, Kvo G, Weiner A, Overby L, Bradley D, Houghton M : Isolation of a c DNA clone derived from a blood - borne non A - non B viral hepatitis genome. Science 1989; 244 : 359-362.
6. Da Potro A, Poli P, Calzavara P, Castelletto MR, Adami A, Cascone C, Amici GP, Teodori T, Okoliesanyi L : Comparison between first and second generation test for antihepatitis C virus antibodies in hemodialysis patiats Nephron 1991; 61 : 367-368.
7. Esteban J, Esteban R, Viladomiv L, et al : Hepatitis C virus antibodies among risk groups in spain. Lancet 1989; 2 : 294-297.
8. Genesca J, Esteban J, Alter S : Harvey bloodborne non A, non B hepatitis . Hepatitis C. Seminars in Liver Disease 1991; 11 : 147-164.
9. Gilli P, Moretti M : Anti HCV positive patients in dialysis unit. Lancet 1990; 2 : 243-244.
10. Kosetz RL, Stone V, Monsa M, Gunick G : The pursuit of hepatitis in dialysis units Am J Nephrol 1984; 4 : 222-226.

11. Mondelli MV, Cristina G, Filice G, et al : Anti HCV positive patients in dialysis units ? Lancet 1990; 2 : 243-244.
12. Raccosta G, Merltti MG, Lisi E, Ciccarelli P, Trivelli G, Cappons E : Previdence of hepatitis in our hemodialysed population. Nephron 1992; 61 : 300-301.
13. Rogendof M, Beinhard F : Antibodies to hepatitis C virus. Lancet 1989; 2 : 324-325.
14. Sheron N, Alexandr GJM : Hepatitis C, Dand E virus infection. Bailliere's Glinical gastro-enterology sept 1990; 4 : 3.
15. Tamara I, Kobayoshi Y, Tetsuzo K, et al : Hepatitis C virus antibodies in hemodialysis patients. Lancet 1990; 1 : 409.
16. Thaler M, Perk CK, Landers D, et al : Vertical transmission of hepatitis C virus. Lancet 1991; 338 : 17-18.
17. Ware AJ, Lubyi Hollinger FB, et al : Etiology of liver disease in renal - transplant patients. Ann Int Med 1979; 91 : 364-371.
18. Weiland O, Schvarcz R : Hepatitis C virology epidemiyology, clinical course and treatment (Review) scand. J Gastroent 1992; 27 : 337-342.
19. Yamaguchi K, Kishimora Y, Fukuoka N, et al : Hep - C virus antibodies in hemodialysis patients Lancet 1990; 1 : 1409-1410.
20. Zeldis JB, Depner PA : The prevalence of hepatitis C virus antibodies among hemodialysis patients. Ann Int Med 1990; 112 : 958-960.