

Liver Function Test in Chronic Hemodialyzed Patients with Anti Hepatitis C Virus Antibody

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ABSTRAK

Mochammad Sja'bani, Soeliadi H. W., A. H. Asdie, I. G. Raka Widiana, dan A. Soefyani – Uji fungsi hepar pada penderita hemodialisis kronik dengan antibodi terhadap virus hepatitis C

Untuk mengetahui fungsi hepar pada penderita gagal ginjal terminal dengan antibodi terhadap virus hepatitis C (anti HCV) positif yang menjalani hemodialisis, suatu penelitian potong lintang telah dilakukan di Unit Hemodialisis, Rumah Sakit Umum Pusat Dr. Sardjito, Yogyakarta.

Selama penelitian ditemukan 58 penderita (42 laki-laki, 16 perempuan) dengan 32 (55%) anti HCV positif. Tidak ditemukan perbedaan yang bermakna antara kelompok dengan anti HCV positif dan kelompok dengan anti HCV negatif dalam kadar aspartate amino transferase (AST) ($46,22 \pm 20,85$ UI/l vs $40,15 \pm 20,37$ UI/l, $p > 0,05$), kadar alanine amino transferase (ALT) ($45,44 \pm 26,26$ IU/l vs $37,04 \pm 23,03$ UI/l, $p > 0,05$), kadar alkaline phosphatase (ALP) ($156,31 \pm 141,14$ IU/l vs $144,57 \pm 82,15$ IU/l, $p > 0,05$), dan jumlah hemodialisis (8 sampai dengan 733 kali). Kadar AST yang meningkat di atas 1,5 kali nilai normal cenderung ditemukan lebih besar tapi secara statistik tidak signifikan pada kelompok dengan anti HCV positif dibanding dengan kelompok dengan anti HCV negatif (56,0% vs 30,7%, $p > 0,05$) yang mungkin akibat jumlah sampel yang kecil. Frekuensi transfusi ditemukan lebih tinggi secara bermakna pada kelompok dengan anti HCV positif dibanding kelompok dengan anti HCV negatif ($3,53 \pm 3,47$ vs $2,23 \pm 1,47$ kali, $p < 0,05$).

Key Words : hepatitis C virus – anti HCV antibodies – end stage renal disease – blood transfusion – hemodialysis

INTRODUCTION

Viral hepatitis is a major complication of blood transfusion and a majority of post transfusion hepatitis is caused by non A non B virus. Hemodialysis is considered to be a

risk factor for hepatitis C virus infection. A high prevalence of anti hepatitis C antibody was found in patients who undergo hemodialysis (Sya'bani *et al.*, 1992; Tamura *et al.*, 1990; Yamaguchi *et al.*, 1990). The prevalence is also greater if compared to its prevalence in chronic liver disease patients (Soeliadi *et al.*, 1993).

This study was aimed at determining the liver function in end stage renal disease (ESRD) patients with anti HCV antibody positive who underwent hemodialysis and its relationship to blood transfusion with the total hemodialysis.

MATERIALS AND METHODS

A cross-sectional study was conducted at the Hemodialysis Unit at the Dr. Sardjito General Hospital, during October 1992.

Patients who underwent hemodialysis for more than one year, twice a week, were included in this study. The medical records of all patients were evaluated and those who met the inclusion criteria were examined for their anti HCV antibody, hepatitis B surface antigen (HBsAg), the total hemodialysis and frequency of blood transfusion.

Ten millilitres of venous blood samples were taken for the examination of aspartate aminotransferase (AST), alanine aminotransferase (ALT) and alkaline phosphatase (ALP). Anti HCV levels were examined by ELISA method (Ortho Diagnostic); meanwhile AST, ALT and ALP by enzymatic methods.

All patients were divided into 2 groups i.e. anti HCV positive group and anti HCV negative group. AST, ALT and ALP levels, frequency of transfusion and total of hemodialysis of both groups were analyzed.

RESULTS

Fifty eight ESRD patients who underwent chronic hemodialysis consisted of 42 males and 16 females participated in this study. Among all patients 32 (55%) with anti HCV positive and 26 (45%) with anti HCV negative (TABLE 1). There was no significant difference in AST levels (46.22 ± 20.85 IU/l vs 40.15 ± 20.37 IU/l; $p > 0.05$), ALT levels (45.44 ± 26.26 IU/l vs 37.04 ± 23.03 IU/l; $p > 0.05$), and ALP levels (156.31 ± 141.14 IU/l vs 144.57 ± 82.15 IU/l; $p > 0.05$) between anti HCV positive group and anti HCV negative group (TABLE 2). One and a half normal value increase of AST, ALT and ALP were also assessed between both groups. There was a greater increase of AST levels in anti HCV positive group (56% vs 30.7%, $p > 0.05$) compared to HCV negative group but statistically not significant. This result perhaps due to a small sample size of this study (TABLE 3). No significant difference in total hemodialysis was found between anti HCV positive group (107.90 ± 133.19 times vs 119.69 ± 104.19 times, $p > 0.05$) and anti HCV negative group. However blood transfusion frequency was significantly higher in anti HCV positive group (3.53 ± 3.47 time vs 2.23 ± 1.47 times, $p < 0.05$) compared to those with anti HCV negative (TABLE 4).

TABLE 1. – Baseline characteristics of end stage renal-disease (ESRD) patients who underwent chronic hemodialysis

Characteristics	Value
Total number of patients	58
Males	42
Females	16
Age (years)	48.66 ± 13.58
HBsAg positive (%)	6 (10)
Anti HCV positive (%)	32 (55)
Anti HCV negative (%)	26 (45)
Total hemodialysis (times)	8 - 733
Frequency of transfusion (times)	2.95 ± 2.82

TABLE 2. – AST, ALT and ALP levels in patients with anti HCV positive and anti HCV negative

Categories	Anti HCV Positive	Anti HCV Negative	<i>p</i> ¹⁾
AST (IU/l)	46.22 ± 20.85	40.15 ± 20.37	0.1352
ALT (IU/l)	45.44 ± 26.26	37.04 ± 23.03	0.1031
ALP (IU/l)	156.31 ± 141.14	144.57 ± 82.15	0.3545

1) (Student's t test)

TABLE 3. – Elevation of AST, ALT, ALP titres of more than one and a half fold of normal value in patients with anti HCV positive and anti HCV negative

Categories	Anti HCV Positive (n = 32)	Anti HCV Negative (n = 26)	<i>p</i> ¹⁾
AST	18 (56.0%)	8 (30.7%)	0.0532
ALT	13 (40.6%)	5 (19.0%)	0.0684
ALP	21 (65.0%)	17 (65.0%)	0.0984

1) (Student's t test)

TABLE 4. – Total of hemodialysis and frequency of blood transfusions in patients with anti HCV positive and anti HCV negative

Categories	Anti HCV Positive (n = 32)	Anti HCV Negative (n = 26)	<i>p</i> ¹⁾
Total number of Hemodialysis (times)	107.90 ± 133.19	119.69 ± 104.19	0.3569
Frequency of transfusions (times)	3.53 ± 3.47	2.23 ± 1.47	0.0402

1) (Student's t test)

DISCUSSION

During the study, among 58 ESRD patients 55% and 45% were found with anti HCV positive and negative respectively. Our findings seemed to be higher than those found in the previous study (TABLE 5).

TABLE 5 shows that frequency of anti HCV in hemodialyzed patients from hemodialysis centers in some countries varies from 1.3 to 55% or 58 to 1423 patients (Sya'bani *et al.*, 1992; Tamura *et al.*, 1990; Yamaguchi *et al.*, 1990; Schlipkoter *et al.*, 1990; Brunano *et al.*, 1992; Dentico *et al.*, 1992; Gubertini *et al.*, 1992). Anti HCV positive was found to be correlated with the duration of hemodialysis even with anti HCV positive found in patients who underwent hemodialysis for less than 3 months. However anti HCV was not found in one patient although hemodialysis had already been done for 20 years (Schlipkoter *et al.*, 1990)

Liver function (ALT and ALP) was not significantly different in patients with anti HCV positive and anti HCV negative, while AST levels of more than one and a half from normal value were found more frequent in patients with anti HCV positive (TABLE 2).

TABLE 6 shows that from 13.7 - 57% patients with anti HCV positive who underwent chronic hemodialysis had elevation of transaminase titres.

Our study has shown that the frequency of blood transfusion in anti HCV positive patients significantly higher than those with anti HCV negative.

TABLE 5. - Frequency of anti HCV positive in some hemodialysis centers

Number of subjects	Anti HCV Positive	Setting	Investigator
139	26 (18 %)	Japan	Tamura <i>et al.</i> , 1990
1423 with 374 controls	316 (22.2%) 5 (1.3%)	Japan	Yamaguchi <i>et al.</i> , 1990
1107	112 (10 %)	Germany	Schlipkoter <i>et al.</i> , 1990
229	52 (22 %)	Italy	Gubertini <i>et al.</i> , 1990
284	55 (19.4%)	Italy	Dentico <i>et al.</i> , 1992
269	32 (11.8%)	Italy	Brunano <i>et al.</i> , 1992
58	32 (55 %)	Indonesia	Sja'bani <i>et al.</i> , 1992

TABLE 6. - Transaminase levels elevation in anti HCV positive patients in some studies

Positive anti HCV (Number of subjects)	Transaminase (times of N value)	Elevation (Percentage)	Setting	Investigator
271	(NA)	134 (49 %)	Japan	Yamaguchi <i>et al.</i> , 1990
7	(2 - 5)	4 (57 %)	Netherland	Poel <i>et al.</i> , 1990
112	(NA)	41 (37 %)	Germany	Schlipkoter <i>et al.</i> , 1990
51	(NA)	7 (13.7%)	Italy	Gubertini <i>et al.</i> , 1990
10	(>2.5)	3 (33 %)	Italy	Medici <i>et al.</i> , 1992
17	(2 - 10)	8 (47 %)	Italy	Ruffati <i>et al.</i> , 1992
32	(>1.5)	13 (40.6%)	Indonesia	Sja'bani <i>et al.</i> , 1992

NA = Not Available

TABLE 7 shows that from some studies ESRD patients who underwent chronic hemodialysis, anti HCV positive were more frequent if patients received more frequent blood transfusion.

TABLE 7. – Frequency of blood transfusion in anti HCV positive patients

Frequency (times)	Anti HCV Positive	Setting	Investigator
never	5/7 (71%)	Indonesia	Sja'bani <i>et al.</i> , 1992
1 – 5	21/44 (48%)		
more than 5	6/7 (86%)		
never	4/43 (9%)	Japan	Tamura <i>et al.</i> , 1990
1 – 5	5/38 (13%)		
6 – 20	7/34 (21%)		
more than 20	10/12 (83%)		
never	6/39 (15%)	Italy	Besso <i>et al.</i> , 1992
1 – 5	6/33 (48%)		
more than 5	17/33 (51%)		

TABLE 8. – Total hemodialysis in anti HCV positive patients at some hemodialysis centers

N	Anti HCV Positive (n)	Total Hemodialysis (times)	Setting	Investigator
106	39	63.8 – 104.9	Italy	Besso <i>et al.</i> , 1992
105	12	21.5 – 97.2	Italy	Pauri <i>et al.</i> , 1992
56	10	63.7 – 104.2	Italy	Medici <i>et al.</i> , 1992
284	55	71	Italy	Dentico <i>et al.</i> , 1992
58	32	8 – 733	Indonesia	Sja'bani <i>et al.</i> , 1992

In our study, there was no significant difference in total number of hemodialysis between patients with anti HCV positive and anti HCV negative ($p > 0.05$). This result was similar to those found by Pauri *et al.* (1992), that hemodialysis did not affect the positivity of anti HCV. This was contrary to those reported by Dentico *et al.* (1992), that anti HCV was more frequent in patients with more frequent hemodialysis. Medici *et al.* (1992) have also reported, that the total number of hemodialysis in patients with anti HCV positive was significantly more frequent than those with anti HCV negative.

CONCLUSION

Hemodialysis in ESRD patients with anti HCV positive have significantly required more frequent blood transfusion than those with anti HCV negative. In both groups there were no significant differences in AST, ALT, ALP titres and total number of hemodialysis. However, one and a half increase of normal level of AST titres was found to be more frequent in patients with anti HCV positive although this is not significant and might be due to the small sample size.

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