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Research Article

FREQUENCY OF ANTI-HCV IN PATIENTS ON MAINTENANCE HEMODIALYSIS AND ITS ASSOCIATION WITH PAST BLOOD TRANSFUSION HISTORY AND PRACTICES OF HEMODIALYSIS

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Abstract:

Objectives: This research work aimed to find out the rate of occurrence of anti-HCV among patients having maintenance HD (Hemodialysis) and its relationship with the past history of transfusion of blood as well as practice of hemodialysis in different centers.

Methodology: All patients under maintenance hemodialysis at Allied Hospital Faisalabad from September to August of 2019 were the participants of this research work. We recorded the details about demography, past history of transfusion of blood and history of hemodialysis from any other health center in addition with Allied Hospital Faisalabad. Chemiluminescent assay was in use for conduction of anti-HCV. We used Chi square method for the comparison of various categorical variables. We calculated the RR (Relative Risk) and OR (Odds Ratio) for the patients of groups for exposure risk.

Results: Out of ninety six patients, 41.60% (n: 40) patients were positive for anti-HCV. Total 64.60% (n: 62) patients were present with past history of transfusion. Fifty percent (n: 31) of these sixty two patients were anti-HCV positive in comparison with the 26.50% (n: 9) out of thirty four patients were with no past history of blood transfusion ($P= 0.0250$); $OR= 2.780$ ($P=0.02780$), $RR= 1.890$ ($P= 0.0420$). Among 68.70% (n: 66) out of total ninety six patients who were under HD from various other centers in addition with our institute, 50.0% (n: 33) patients were positive for anti-HCV in comparison with 23.30% (n: 7) of twenty three who had hemodialysis from our institute only ($P= 0.0140$); $OR= 3.290$ ($P= 0.0167$), $RR= 2.140$ ($P= 0.03090$).

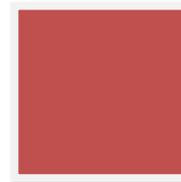
Conclusion: There was very high incidence (41.60%) of anti-HCV in patients under HD and there was strong association of positivity of anti-HCV with the past history of the transfusion of blood as well as past history of hemodialysis from different centers.

KEYWORDS: Incidence, anti-HCV, transfusion, hemodialysis, comparison, categorical, variables, OR, RR, Chi-square, renal diseases.

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INTRODUCTION:

Patients with ESRD (End-Stage Renal Disease) under maintenance HD are highly prone to contract with infection of HCV which is an important reason of high rate of morbidity as well as mortality in the patients under HD [1]. Enhanced risk of NSI (Nosocomial Infection) by hepatitis C virus or hepatitis B virus in the patients on hemodialysis has been attributed to abnormal cellular immunity, transfusion of blood, frequent stay in hospital and surgical interventions [2, 3]. The incidence rate of anti-HCV is much high in the patients suffering from end stage renal diseases on hemodialysis in comparison with the normal general public. Different research works conducted in various regions of world have displayed wide range of results about the incidence of anti-HCV among patients on maintenance hemodialysis. In regions of northern Europe, the prevalence rate is lower than 5.0% but in regions of southern Europe and USA, it is about 10.0% and in various regions of Asia, South America and Africa, this prevalence rate is up to 70.0% [4, 5]. Blood transfusion is the most common factor accountable for the hepatitis risk in the patients suffering from end stage renal diseases on hemodialysis.

Many research works have displayed relationship transfusion of blood with the enhanced incidence rate anti HCV among patients under hemodialysis but some works were not in favor of this argument [6]. Additionally, to the transfusion of blood, hemodialysis from different centers has also been detected as important factor of risk for acquiring the infections of HCV. We also identified this practice in some of our patients. This research work carried out to find out the rate of occurrence of anti-HCV among patients on maintenance hemodialysis and its relationship with the past history of transfusion of blood and practice of hemodialysis from more than a single center.

METHODOLOGY:

This research work carried out in Allied Hospital Faisalabad from September 2019 to August 2019. We used the non-probability sampling technique for the selection of samples. Ethical committee of the institute gave the permission to conduct this research work. We included all the patients

undergoing maintenance hemodialysis at Unit of Nephrology of Allied Hospital Faisalabad in the duration of this research work. We excluded all the patients suffering from acute kidney injury needing hemodialysis. In addition to the details of demography of the patients, data about the past history of the transfusion blood and hemodialysis history from other centers additionally with our institute were in records. Chemiluminescent immunoassay was in use to carry out the anti-HCV of all the patients. We divided the patients into groups;

1. Patients with past history of transfusion of blood.
2. Patients with no history of transfusion of blood.

We used the Chi-square method for the comparison of the frequencies & percentages of patients who were anti-HCV positive in both groups. In the same manner, we divided the patients into;

1. Patients on hemodialysis exclusively from our institute.
2. Patients who got the services of hemodialysis from other centers of city or other cities.

We used Chi-square method for the comparison of the frequencies & percentages of the anti-HCV patients on both groups. P value of less than 0.050 was significant. The assessment of the relationship of prevalence of anti-HCV with transfusion of blood and practice of hemodialysis from greater than single center carried out by OR (Odd Ratio) and RR (Relative Risk) with CI (Confidence Intervals) & P values.

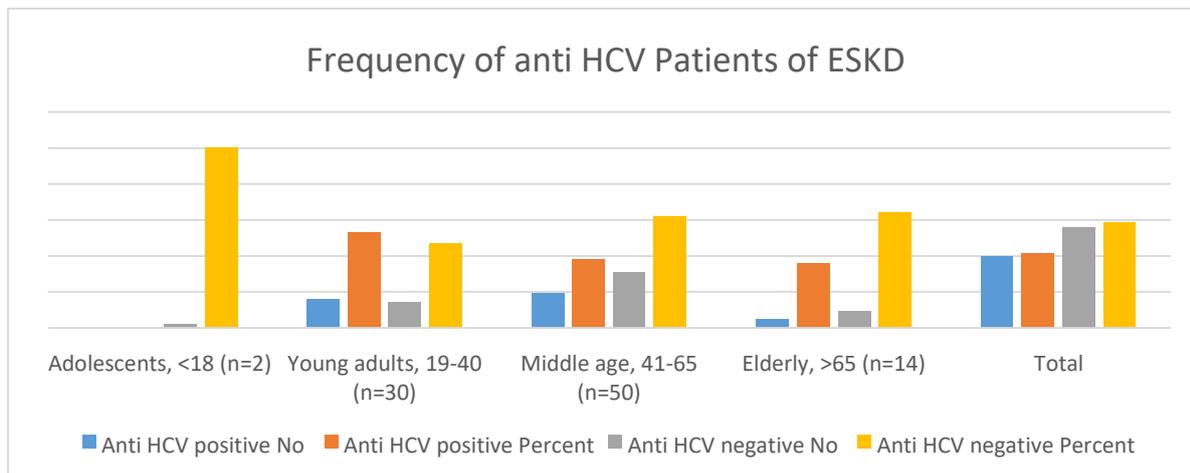
RESULTS:

Total ninety six patients were the participants of this research work. Ratio of female to male was 1:1.8 with 64.60% (n: 62) male and 35.40% (n: 34) female patients. The range of the age of patients was 17-81 years. Median age of the patients was fifty years whereas average age of the patients was 47.84 ± 14.75 . There were total 41.60% (n: 40) anti-HCV positive patients. Patient's distribution into various age groups and rate of occurrence of positivity of anti-HCV in both groups is present in Table-1.

Table-I: Frequency of anti-HCV positive and negative patients of ESKD on HD.

Age groups	Anti HCV positive		Anti HCV negative	
	No	Percent	No	Percent
Adolescents, <18 (n=2)	0.0	0.00	2.0	100.00
Young adults, 19-40 (n=30)	16.0	53.30	14.0	46.60
Middle age, 41-65 (n=50)	19.0	38.00	31.0	62.00
Elderly, >65 (n=14)	5.0	35.70	9.0	64.30
Total	40.0	41.60	56.0	58.40

Abbreviations: ESKD: End stage kidney disease, HCV: Hepatitis C Virus, HD: Hemodialysis.

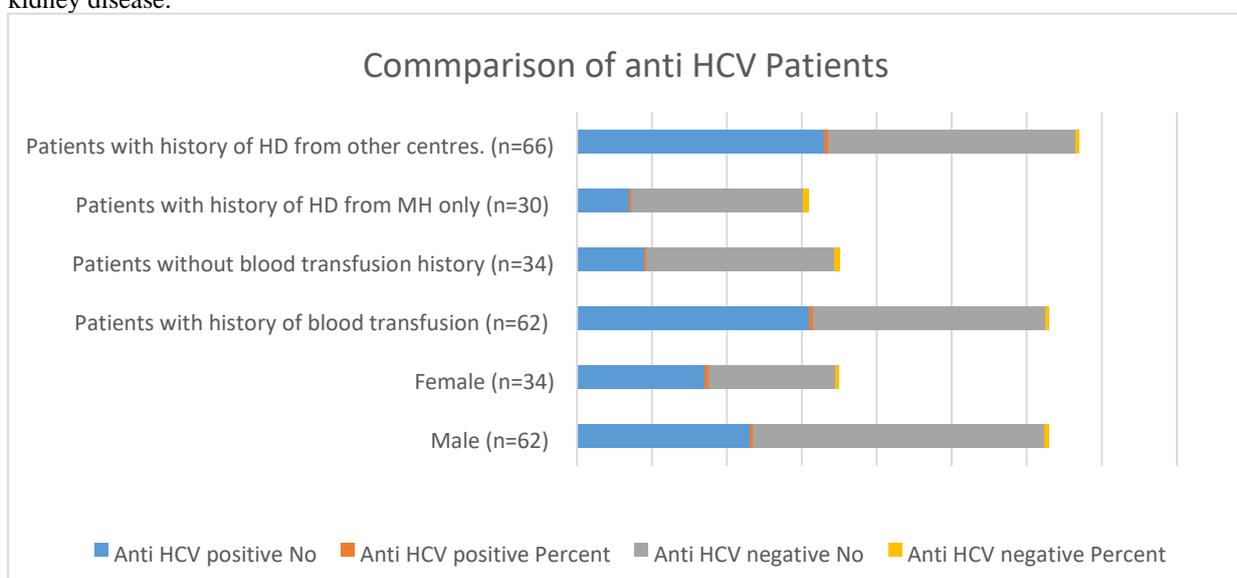


The comparison of the positive anti-HCV & negative anti-HCV end stage renal diseases patients on maintenance hemodialysis, on the basis of frequency of gender, availability and non-availability of the past history of transfusion and existence or non-existence of the past history of hemodialysis from other dialysis centers are present in Table-2.

Table-II: Comparison of different groups of anti HCV positive and negative ESKD patients on maintenance HD (N=96).

	Anti HCV positive		Anti HCV negative		Chi Square	p-Value
	No	Percent	No	Percent		
Male (n=62)	23.0	37.10%	39.0	62.90%	X ² =1.500	0.2200
Female (n=34)	17.0	50.00%	17.0	50.00%		
Patients with history of blood transfusion (n=62)	31.0	50.00%	31.0	50.00%	X ² =5.00	0.0250
Patients without blood transfusion history (n=34)	9.0	26.50%	25.0	73.50%		
Patients with history of HD from MH only (n=30)	7.0	23.30%	23.0	76.60%	X ² =6.030	0.0140
Patients with history of HD from other centers. (n=66)	33.0	50.00%	33.0	50.00%		

Abbreviations: MH: Allied Hospital Faisalabad, HCV: Hepatitis C virus, HD: Hemodialysis, ESKD: End stage kidney disease.



Among patients present with the past history of transfusion of blood odd ratio of being positive for anti-HCV was 2.780 with 95.0% CI= 1.118 to 6.9019 and P-value= 0.02780, which was much significant. This odd ratio corresponded to RR of 1.890 with 95.0% CI= 1.0232 to 3.487 and P-value= 0.0420, which was also significant. Among patients present with the past history of hemodialysis from other centers in addition to our unit, odd ratio of being positive for anti-HCV was 3.290 with 95.0% CI=1.2406 to 8.7022 and Pvalue= 0.0167, which was much significant and corresponding RR was 2.140 with 95.0% CI= 1.0726 to 4.2811 and P= 0.0309, which was also much significant.

DISCUSSION:

Anti-HCV is an epidemiological marker for hepatitis C virus. In accordance with the estimates of WHO, higher than seventy-one million population was living with infection of HCV in 2015 and about 1.75 million new infections of HCV occurred in the duration of same year [7]. One other research work on a large scale stated the overall prevalence rate of HCV infection in our country Pakistan as 6.20% [8]. One other research work conducted in Rawalpindi on blood donors stated the incidence rate of anti-HCV as 2.60% [9]. The prevalence rate of anti-HCV is high in the patients on maintenance hemodialysis as compared to general public. We found 41.60% patients on hemodialysis with positive anti-HCV. We observed the highest percentage (53.30%) of positivity of anti-HCV in young adults from 19 to 40 years of age. There are very few works available in Pakistan on prevalence of anti-HCV positivity in the patients on hemodialysis. One other research work conducted in Lahore stated the anti-HCV prevalence in the patients on hemodialysis as 68.0% [10].

Data from other countries of the world has displayed high variation in the rate of prevalence of positivity of anti-HCV in patients on hemodialysis. Research works from various countries of Europe and North America as United Kingdom, Germany and USA have very low prevalence i.e. 4.0%, 6.0% and 7.30% correspondingly [6, 11, 12]. In countries of Sudan, Libya, Russia & Saudi Arabia, the frequency is 23.70%, 14.0%, 20.50% and 16.70% respectively [6, 12]. Majority of the research works have stated that past history of the transfusion of blood has association with the enhanced anti-HCV prevalence in patients on HD. Some research work conducted in different countries as Iran, Syria and Saudi Arabia were not able to detect the blood transfusion as a significant factor of risk in spreading of HCV infection in the patients on HD [13,15]. There are about three hundred centers of dialysis in our country and there is presence of more than 20000 new patients of end stage renal diseases every year, so these units are greatly overburdened [16, 17].

CONCLUSION:

There was very high rate of prevalence (41.60%) of anti-HCV in patients on hemodialysis and there was strong association of positivity of anti-HCV with the past history of transfusion of blood as well as past history of hemodialysis from other centers.

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