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Incidence of Hepatitis C Infection in Patients on Dialysis at Tikrit Teaching Hospital: A Case-Control Study

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ABSTRACT

Background: Hepatitis C virus (HCV) infection remains a major public health problem among patients undergoing hemodialysis. Frequent blood exposure, repeated vascular access, and prolonged hospital stay increase the risk of transmission. Patients receiving maintenance hemodialysis are at high risk for acquiring hepatitis C virus infection than the others.

Objective: To determine the incidence and associated risk factors of Hepatitis C infection among dialysis patients at Tikrit Teaching Hospital. The study started from 1st mars to 30t may 2024. The total study group consisted of 100 patients. The participants were directly interviewed according to questionnaire consist socio-demographic data were (age, gender, marital stats, occupation) and duration on hemodialysis, number of hemodialysis session.

Methods: A case-control study was conducted involving 100 participants divided equally into 50 hemodialysis patients and 50 healthy controls. Demographic characteristics, duration of dialysis, blood transfusion history, and HCV serological status were evaluated. Statistical analysis was performed using SPSS version 26.

Results: The prevalence of HCV infection among dialysis patients was significantly higher compared to controls. Longer dialysis duration, multiple blood transfusions, and older age were associated with increased HCV positivity.

Conclusions: Hemodialysis patients are at significantly higher risk of HCV infection. Strict infection control measures and periodic screening are recommended to reduce disease transmission.

INTRODUCTION

The infectious hepatitis C virus (HCV) can cause anything from a minor illness that lasts a few weeks to a serious, lifelong liver-attacking illness. It is caused by HCV infection, which is mainly transmitted via coming into touch with an infected person's blood. Hepatitis C virus infection is a blood-borne disease causing chronic liver disease, cirrhosis, and hepatocellular carcinoma worldwide. Patients receiving maintenance hemodialysis are considered a high-risk group because of repeated blood exposure and invasive procedures.[1],[6] The prevalence of HCV infection among dialysis patients varies significantly across countries and healthcare settings. In developing countries, inadequate infection control practices and limited screening programs contribute to higher transmission rates.

In Iraq, several studies have demonstrated increased HCV prevalence among dialysis patients. However, limited data are available regarding patients attending Tikrit Teaching Hospital. Therefore, this study was designed to evaluate the incidence of HCV infection and identify associated risk factors among patients on dialysis.[2],[7],[8].

OBJECTIVES

- To determine the incidence of Hepatitis C infection among dialysis patients.
- To compare HCV prevalence between dialysis patients and healthy controls.
- To identify risk factors associated with HCV infection.

MATERIALS AND METHODS

A hospital-based case-control study. Dialysis Unit, Tikrit Teaching Hospital, Iraq. A total of 100 participants were included: - 50 patients undergoing regular

hemodialysis. - 50 healthy controls. For the study, A questionnaire was created including data on age, sex, marital status, occupation, length of hemodialysis, and number of hemodialysis sessions. A history of the patient's risk factors, including hypertension, diabetes mellitus, blood transfusions, and tattoos, was also included in the questionnaire.

INCLUSION CRITERIA:

Patients undergoing dialysis for more than six months.

EXCLUSION CRITERIA:

Patients with known chronic liver disease unrelated to HCV. Data were collected using structured questionnaires and laboratory investigations.

Blood samples were tested for anti-HCV antibodies using ELISA techniques. Data were analyzed using SPSS version 26. Chi-square test and odds ratios were used.

A p-value <0.05 was considered statistically significant.

RESULTS

Among the dialysis group, 32% of patients were positive for HCV antibodies compared with 4% among controls. The mean age of dialysis patients was 52 ± 10 years. Patients with dialysis duration exceeding 5 years showed significantly higher HCV positivity. Blood transfusion history was strongly associated with HCV infection.

DISCUSSION

The current study demonstrated a significantly higher prevalence of HCV infection among hemodialysis patients compared to healthy controls. This finding is consistent with previous regional and international studies reporting elevated

HCV rates in dialysis units. Repeated vascular access, prolonged duration of dialysis, and frequent blood transfusions are major contributing factors. Patients receiving dialysis for more than five years demonstrated higher infection rates, emphasizing the cumulative exposure risk.

Implementation of infection control policies, proper sterilization techniques, and routine HCV screening are essential measures to reduce transmission. The findings also highlight the importance of educating healthcare workers regarding standard precautions and safe dialysis practices. According to this study, 26% of patients had HCV. This percentage is significantly higher than the 7.1% frequency found in an earlier study conducted in Baghdad by Khattab et al. (2008) at an Iraqi kidney transplant hospital [10]. Hepatitis C nosocomial transmission among HD patients may be the cause of this elevated occurrence. The National Office of Statistics (2008) in Algeria reported similar results, which were 23.8% [3]. This study demonstrated a favorable significant link ($p=0.005$) between attending multicenter and single center dialysis, which is consistent with research by Assarehzadegan et al. (2009) in Khuzestan province, Southwest Iran [4]. In order to prevent nosocomial transmission, this may be connected to varying levels of sanitation and disinfection of HD machinery, instruments, and environmental surfaces [5],[9]. This section provides additional interpretation of the study findings, comparison with international literature, epidemiological implications, infection control considerations, and future research opportunities. The burden of HCV infection in dialysis units remains a major healthcare challenge in developing countries, particularly where healthcare resources are

limited. Enhanced surveillance systems and evidence-based preventive strategies are necessary to improve patient safety and reduce nosocomial transmission.[9]

CONCLUSION

Patients undergoing hemodialysis at Tikrit Teaching Hospital showed a significantly higher incidence of HCV infection compared to healthy controls. Dialysis duration and blood transfusion history were major associated risk factors.

RECOMMENDATIONS

- Regular screening of dialysis patients for HCV infection.
- Strict adherence to infection control protocols.
- Minimizing unnecessary blood transfusions.
- Continuous training of dialysis staff.
- Further multicenter studies with larger sample sizes

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TABLES

Table 1. Blood transfusion history was strongly associated with HCV infection.

Variable	Cases (n=50)	Controls (n=50)
HCV Positive	16 (32%)	2 (4%)
Male Gender	30 (60%)	28 (56%)
Blood Transfusion History	38 (76%)	8 (16%)

FIGURES

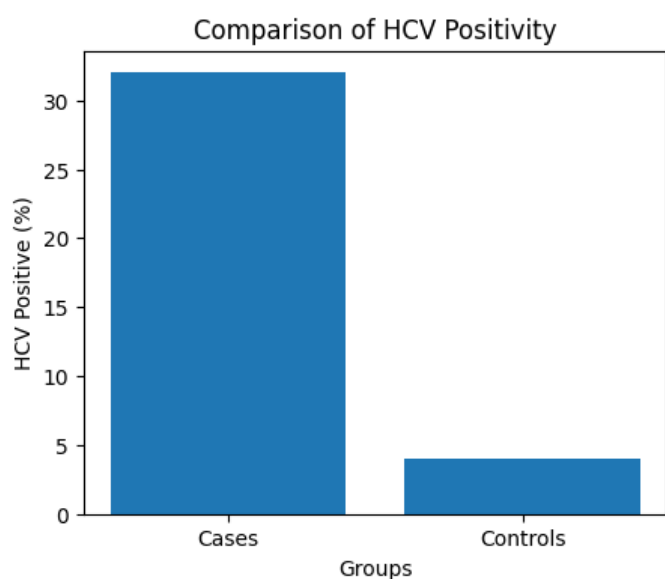


Figure 1. Comparison of HCV Positivity

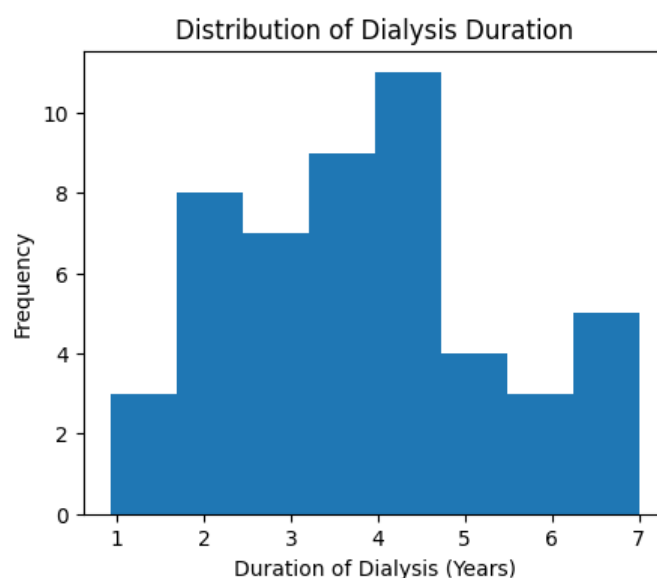


Figure 2. Distribution of Dialysis Duration