

# An Outbreak of Hepatitis C Virus at a Renal Dialysis Unit: A Lesson From a War Zone

Nawfal R Hussein,<sup>1\*</sup> and Zana Sidiq Mohammed Saleem<sup>1</sup>

<sup>1</sup>Department of Internal Medicine, College of Medicine, University of Duhok, Duhok, Kurdistan Region, Iraq

\*Corresponding author: Nawfal R Hussein, Department of Internal Medicine, College of Medicine, University of Duhok, Duhok, Kurdistan Region, Iraq. Tel: +96-475075002, E-mail: Nawfal.Hussein@yahoo.com

Received 2016 June 07; Revised 2016 June 09; Accepted 2016 June 09.

**Keywords:** HCV, Outbreak, Syrian Refugees, Iraq, Dialysis

## Dear Editor,

In patients on regular hemodialysis, Hepatitis C virus (HCV) is considered the most important infectious disease transmitted by parenteral route. Such an infection may predispose the patient to serious consequences such as cirrhosis and hepatocellular carcinoma. The prevalence of HCV antibody positivity in patients on hemodialysis varies markedly from 5% in industrialized countries to up to 54% in some developing countries (1). Duhok is an Iraqi city in the Kurdistan region, northern Iraq. The city hosts 744 685 internally displaced persons and 109 352 registered Syrian refugees. Additionally, the city hosts thousands of unregistered Syrian refugees and is the main destination for Syrians after the war. Duhok renal dialysis center is the main center serving the people living in this city. Due to the war circumstances, three types of patients visit the dialysis center: regular visitors, emergency patients and patients with unsettled addresses, who are mainly refugees and internally displaced persons. All patients are screened for HCV, on a monthly basis. In studies conducted in neighboring countries such as Iran, Turkey and Saudi Arabia, it was found that the prevalence of HCV in such patients was 4%, 29% and 20%, respectively (2, 3). In Europe, the prevalence of infection ranges from 2% in the UK and around 20% in Spain and Italy (3-5). We followed up 99 patients during year 2015 starting from January to December by HCV AB testing by the enzyme-linked Immunosorbent assay (ELISA). At the beginning of our study, two patients (2%) were HCV antibody-positive and both were sent for polymerase chain reaction (PCR) to confirm current infection. Hepatitis C virus-real time polymerase chain reaction (HCV-RTPCR) showed positive results for both patients. This positivity rate was less than what was found in most of the renal dialysis patients in regional countries (6, 7) but higher than the general population in the city (8, 9). During the course of our study, three new cases were diagnosed with HCV. In October 2015, three new samples (two

males and one female) showed HCV-AB positivity. The tests were repeated again and were positive and then, the positivity of these patients was confirmed by RTPCR. All newly-diagnosed patients were interviewed and they denied all risk factors for the transmission of HCV in the previous six months. Recalling that the three patients used the same unit, it was concluded that the infection was acquired during the dialysis. All other patients were screened and were negative for HCV. However, there were some missing patients due to the absence of a fixed address. No more new cases were detected in subsequent months. A thorough investigation was carried out to discover the causes of such an outbreak. It was noticed that the number of dialysis sessions was substantially increased from 627 sessions per month before the war to 1335 sessions per month with the arrival of refugees after the war. This duplication in the session's number may have put the staff of sterilization under pressure of finishing the sterilization sessions as soon as possible to meet the increasing demands of the center for all dialysis machines. The increasing number of refugees and internally displaced persons increased the burden on the thriving health system in the region. Urgent help is needed from the international community to stabilize the health system and prevent the spread of diseases especially infectious and communicable diseases. Collapse of the health services in the region may help the spread of infections and change the map of infectious diseases worldwide, as most refugees use the region as a transient point to travel to Europe and other parts of the world.

## Footnote

**Authors' Contribution:** Nawfal R Hussein and Zana Sidiq Mohammed Saleem carried out the entire project and approved the final draft of the manuscript.

## References

1. Wright TL, Pereira BJG. Hepatitis C Virus. *Seminars in Dialysis*. 2007;**10**(5):241-4. doi: [10.1111/j.1525-139X.1997.tb00502.x](https://doi.org/10.1111/j.1525-139X.1997.tb00502.x).
2. Karkar A. Hepatitis C in dialysis units: the Saudi experience. *Hemodial Int*. 2007;**11**(3):354-67. doi: [10.1111/j.1542-4758.2007.00192.x](https://doi.org/10.1111/j.1542-4758.2007.00192.x). [PubMed: [17576302](https://pubmed.ncbi.nlm.nih.gov/17576302/)].
3. Alavian SM, Bagheri-Lankarani K, Mahdavi-Mazdeh M, Nourozi S. Hepatitis B and C in dialysis units in Iran: changing the epidemiology. *Hemodial Int*. 2008;**12**(3):378-82. doi: [10.1111/j.1542-4758.2008.00284.x](https://doi.org/10.1111/j.1542-4758.2008.00284.x). [PubMed: [18638096](https://pubmed.ncbi.nlm.nih.gov/18638096/)].
4. Gallego E, Lopez A, Perez J, Llamas F, Lorenzo I, Lopez E, et al. Effect of isolation measures on the incidence and prevalence of hepatitis C virus infection in hemodialysis. *Nephron Clin Pract*. 2006;**104**(1):c1-6. doi: [10.1159/000093252](https://doi.org/10.1159/000093252). [PubMed: [16685138](https://pubmed.ncbi.nlm.nih.gov/16685138/)].
5. Barril G, Traver JA. Decrease in the hepatitis C virus (HCV) prevalence in hemodialysis patients in Spain: effect of time, initiating HCV prevalence studies and adoption of isolation measures. *Antiviral Res*. 2003;**60**(2):129-34. [PubMed: [14638409](https://pubmed.ncbi.nlm.nih.gov/14638409/)].
6. Selcuk H, Kanbay M, Korkmaz M, Gur G, Akcay A, Arslan H, et al. Distribution of HCV genotypes in patients with end-stage renal disease according to type of dialysis treatment. *Dig Dis Sci*. 2006;**51**(8):1420-5. doi: [10.1007/s10620-005-9025-9](https://doi.org/10.1007/s10620-005-9025-9). [PubMed: [16868830](https://pubmed.ncbi.nlm.nih.gov/16868830/)].
7. Tajbakhsh R. Prevalence of hepatitis C and B virus infections among hemodialysis patients in Karaj, Iran. *Saudi J Kidney Dis Transpl*. 2015;**26**(4):792-6. doi: [10.4103/1319-2442.160219](https://doi.org/10.4103/1319-2442.160219). [PubMed: [26178560](https://pubmed.ncbi.nlm.nih.gov/26178560/)].
8. Hussein NR, Haj SM, Almizori LA, Taha A. The prevalence of hbv and hcv among blood donors attending blood bank in Duhok city, Kurdistan region, Iraq. *Int J Infect*. 2016.
9. Hussein NR. Prevalence of HBV, HCV and HIV and Anti-HBs antibodies positivity in healthcare workers in departments of surgery in Duhok City, Kurdistan Region, Iraq. *IJPAST*. 2015;**26**(2):70.