Frequency and Viral Load of Hepatitis C Virus in a Tertiary Care Teaching Hospital of D.I. Khan

Sajjad Ahmad*, Hamzullah Khan*, Sadia Anwar**, Muhammad Tariq***, Muhammad Ismail Khan***, Habib Ahmad***

*Department of Pathology, Gomal Medical College, D.I.Khan, **Department of Obs & Gynae, Gomal Medical College, D.I.Khan, ***Department of Genetics, Hazara University, Mansehra, Pakistan

Abstract

Background
Hepatitis C infection is becoming a major health problem of developing countries, including Pakistan that has the second highest prevalence rate of hepatitis C ranging from 4.5% to 8%.

Objectives
To determine the frequency and viral load of Hepatitis C virus in Southern areas of Khyber Pukhtunkhwa (KPK).

Material and Methods
This cross sectional study was conducted in the Department of Pathology, Mufti Mehmood Teaching Hospital Dera Ismail Khan from January to December 2013. A total of 224 patients that had positive Anti-HCV antibodies by ICT and ELISA were referred by their physicians for real time Quantitative PCR for Hepatitis C virus were selected.

Results
Total of 224 patients including 100 females (45%) and 124 males (55.4%) were selected. The age range was 68 years with minimum of 7 year and maximum of 75 years. Median for age was 35 years. 119(55.1%) resulted to be positive for HCV virus on. In positive female patients the mean viral load was 71388.2 while in males it was 139575.3.

Conclusion
There is a high prevalence of HCV in KPK with males being more commonly infected. Viral load was found more in infected males as compared to females at the time of diagnosis before any intervention.

Key words
Hepatitis C Virus, Frequency, Viral Load

Introduction
In Pakistan 10 million people are presumed to be infected with HCV. In Pakistan Percentage prevalence of HCV is 4.95% the general adult population, 1.72% in the pediatric population and 3.64% in a young population applying for recruitment, whereas a very high 57% prevalence was observed in injecting drug users and 48.67% in a multi-transfused population.

Because of the use of viral kinetics during interferon-ribavirin therapy and the development of specific new anti-Hepatitis C virus (anti-HCV) drugs, assessment of the efficacy of anti-HCV drugs needs to be based not on end-point PCR assays but on real-time PCR.

Based on pivotal trials in large multicenter studies, positive and negative predictions of sustained virological response (SVR) using viral load kinetics have been established and are now used for recommendations on antiviral therapy management by the American and European international consensus conference. The data for the proposed algorithm for the management of antiviral therapy in patients with chronic Hepatitis C were mainly based on measurements of viral loads assessed by end-point PCR assays in centralized laboratories. It has its importance in the prognosis and management of the disease.

The present study was therefore conducted to determine the frequency and viral load of Hepatitis C virus in Southern areas of KPK.

Material and Methods
This descriptive cross sectional study was conducted in the Department of Pathology Mufti Mehmood teaching hospital Dera Ismail Khan from Jan 2013-dec 2013. A total of 224 patients were selected randomly as referred to the department for real time Quantitative PCR for Hepatitis C virus.

This was confirmed by using Method Cepheid Smart Cycler@RTPCR. HCV RNA was extracted from patient serum and performed by Real-time PCR with in a single tube. Smart Cycler carried out amplification and detection simultaneously using Taqman probes and detected through fluorescent reporter dye specific for HCV. The result was calculated in Exponential Phase, which is more sensitive and specific. This method allowed us to screen plasma and serum samples over a range between 100 and 10*10 copies of HCV RNA per milliliter (Cps/ml).

Relevant information's were recorded on a pre-designed
proforma. Written informed consent was taken and confidentiality of participants was ensured.

Demographic variables were age, gender and address and research variables were frequency of Hepatitis C cases, viral load and cycle values.

Data was descriptively analyzed in SPSS Version 12.0. Mean and standard deviation are reported.

**Results**

A total of 224 patients including 100 females (44.6%) and 124 males (55.4%) were selected. Gender distribution of patients of patient is given in Table 1.

The age range was 68 years with minimum of 7 year and maximum of 75 years. Median for age was 35 years. Out of total screened, 119 (55.1%) resulted to be positive for HCV virus on PCR and 105 (46.9%) were negative for the virus studies (Table 1). In positive female patients the mean viral load was 71388.2 while in males it was 139575.3 (Table 2).

**Discussion**

Hepatitis C virus (HCV) infection is one of the most important Flaviviridae infections with significant clinical problems throughout the world in humans and it is responsible for the second most common cause of viral hepatitis.\(^6\) Frequency of Hepatitis C is quite high in our population mainly in young adults. We need to adopt organized preventive strategies to overcome this problem.\(^7\) We found 119 (55.1%) cases resulted positive for HCV virus on PCR. Of those positive cases, 43 (36.13%) were females and 76 (63.86%) were males. Another study from Khyber Pakhtunkhwa reported that the frequency of Hepatitis C was higher among the male, 409/751 (54.46%) as compared to female, 342/751 (45.53%).\(^8\)

The diagnosis of acute infection in the HCV-seropositive patient is strengthened by the use of virologic parameters that are uncommon in chronic disease. Viral load fluctuations and low levels of HCV-RNA should be incorporated into standard diagnostic criteria.\(^9\) We tried to determine the viral load frequency by gender, that if there is any sort immunity which neutralizes or protects females more than males. As female gender confer more resistance to HCV load than male gender.

Based on categorization of the viral load into three levels, low (< 60,000 IU/mL), intermediate (60,000-80,000 IU/mL) and high (> 80,000 IU/mL), majority of the subjects in our study had an intermediate load.\(^10\) In the referenced study viral load distribution was also categorized sex wise; for males it was 58 (32.76%), 26 (14.68%) and 93 (52.54%) whereas for females it was 40 (31.25%), 34 (26.56%) and 54 (42.18%) for low, intermediate and high viral load respectively.\(^11\)

**Conclusion**

Hepatitis C infection is common in the southern areas of the province of KPK. This disease is common in males this could be because of the gender in-equality, as more males are referred to the health care centers, or it could be possibly due to some immune protection in females against HCV virus. Viral load was found more in infected males as compared to females at the time of diagnosis before any intervention.

There is need for further studies to discuss why females are more resistant with low viral load as compared to males.

**References**


