Epidemiology of hepatitis C viral infection in Faisalabad, Pakistan: a retrospective study (2010-2012)

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Abstract:
Background: Hepatitis viral infections are major health challenge leading to high morbidity and mortality worldwide. Numerous studies documented prevalence of hepatitis C virus (HCV) infection in Faisalabad, Pakistan is scarce. The present retrospective study was undertaken to determine the epidemiology of HCV in Faisalabad, Pakistan.

Methods: Between May, 2010 and December, 2012, medical records of 39780 subjects visiting sexually transmitted infections (STIs) clinic, district headquarter (DHQ) hospital, Faisalabad, Pakistan were reviewed. Regression analysis was used to determine independent risk factors.

Results: HCV prevalence was 21.99%. With mean age of 49.5 ± 2.7 years (range 27-63 years), majority (67.15%) of the individuals were male. Marital status and low literacy rates were associated with HCV (P<0.05). Reference to the potential risk factors, the injection drug use was the major mode (72.77%) of infection transmission. Age (OR 1.5, 95% CI 1.2-1.9), male gender (OR 1.2, 95% CI 0.9-1.6) and injection use (OR 1.9, 95% CI 1.0-2.7) were significantly associated with HCV.

Conclusions: Most important finding was higher HCV prevalence in Faisalabad region as compared to the previous assessments that demands an urgent need for preventive intervention strategies.

Keywords: Hepatitis C virus; blood transfusion

Introduction
Hepatitis C viral infections are major health challenge, with the global prevalence of 180 million patients. In Pakistan, about one million people are infected with hepatitis C virus (HCV). It leads to liver cirrhosis or hepatocellular carcinoma and results in high morbidity and mortality. Nelson et al.⁶ compiled data on hepatitis prevalence in intravenous drug users (IDU) and it was observed that 60-80% of IDUs had anti-HCV in 25 countries and about 10.0 million IDUs worldwide might be anti-HCV positive. Numerous studies documented prevalence of hepatitis C infection.¹⁻³⁻⁷⁻¹³

Diverse HCV prevalence rates worldwide could be explained by the different risk factors involved.¹⁻³⁻¹³⁻¹⁶ National level, HCV prevalence among general population and high risk groups was reported.²¹⁻²⁴ Ahmed et al.²⁴ reported 16% HCV prevalence among subjects visiting HCV screening camps and blood donors in Faisalabad. HCV infection infects major socioeconomic burdens and effective intervention strategies are mandatory to combat the consequences of hepatitis C at the regional levels.¹²⁻²⁵

Incidence estimates are prerequisite to lessen the disease burden, hence preventive and treatment strategies can be implemented with precise objectives set to be attained. Despite increasing reports of HCV infections, its incidence and risk factors in Faisalabad, Pakistan are still obscure. Present retrospective study was undertaken to determine the epidemiology of viral hepatitis C in the local population.

Methods
Study Period and Data Collection
The study covered two and a half year period from May, 2010 to December, 2012 and included 39780 individuals visiting STIs clinic, DHQ hospital, Faisalabad, Pakistan. From Clinical Pathology Laboratory (CPL), District Headquarter hospital, Faisalabad, Pakistan, patients' records were procured. As per protocols, routine investigation involved blood sera test for antibodies to HCV (anti-HCV) by enzyme linked immunosorbent assay (Abbot Diagnostics, Germany), in accordance with the manufacturer's instructions. In addition, the following information was also collected: age, gender, marital status, education and high risk behaviours (blood donation, intravenous drug abuse and sexual behaviours). The study was anonymous. Ethical approval for the protocols was procured from Research Committee, Punjab Medical College, Faisalabad, Pakistan.

All the data were expressed as number (n) or mean (standard error). Potential risk factors were assessed by multivariate analysis of variance (MANOVA). The p value of less than 0.05 was considered to be significant.

Results
The present retrospective study was conducted with the aim to assess the HCV prevalence rate and the risk factors in general population visiting DHQ hospital, Faisalabad, Pakistan. Overall HCV prevalence was 21.99% (8751/39780) of the total sample. Annual incidence rates of HCV as shown in table 1 were almost consistent over the study period. Comparative analysis of data regarding anti-HCV positive and anti-HCV negative subjects is summarized in table 2. Reference to the baseline characteristics of the HCV positive subjects, the mean age of the positive sample was 49.5 ± 2.7 years, signifying the fact that risk of HCV increased with older age. Majority (67.15%) of the HCV-positive individuals were male and the HCV seroprevalence showed statistically significant differenc...
Discussion

The epidemiology of HCV may be diverse among different ethnic groups and within the same ethnic group residing in different geographic areas. Present study estimated that the prevalence of HCV in Faisalabad region was 21.99% (Table 1) which was a little higher than the earlier reported 16% in Pakistan. Different rates can be justified by the fact that our retrospective study sample comprised of subjects visiting STIs clinic, DHQ hospital, Faisalabad, Pakistan, where as, previous report included subjects visiting HCV screening camps and blood donors. Several national studies indicated high prevalence of HCV infection in high risk groups. The prevalence of HCV was significantly higher (17.3%) in Rawalpindi than in Abbottabad (8%) among IDUs. Kazi et al. determined 15.2% HCV among Pakistani prisoners. Prevalence rates of numerous sexually transmitted diseases in Faisalabad, Pakistan have already been documented, rationalizing the probability of associated infections. With about 50 years of mean patient age in present study, it can be concluded that older age favours HCV infectivity rate. An observation supported by previous studies. Brian et al. and Gaeta et al. indicated that the proportion of patients with clinically apparent hepatitis C increased with age. However, the increase in HCV cannot be explained solely by the effect of aging in the general population. Pakistani society reflects health care negligence and delayed physician consultation and this may present an alternate explanation for the older age in present study.

Infected population attending STIs clinics had more men than women, indicative of striking gender difference (2:1). This tendency can be explained by the fact that chances of exposure to risk factors are more in men. Paladino et al. confirmed that the host’s genetic background plays a significant role in the outcome of HCV infection. In particular, they demonstrated a gender effect associated with the susceptibility to develop a persistent HCV infection. Nonetheless, other general or specified reasons were not mentioned above to explain such effects should not be ignored. Present report documented that marital status and low literacy rates were associated with HCV (P<0.05). Low educational status is one of the major barriers to disease treatment and management in the local population.

Sexual contact, intravenous and percutaneous drug use and occupational, habitual, social behavior have been identified as risk factors for hepatitis transmission in various settings. Present study identified injection drug use as the major factor implicated in HCV infection. Current outcome about IDU was supported by Nelson et al. They detected 60-80% hepatitis C prevalence in injection drug users (IDU). Similarly, in Russian IDU, HCV prevalence was 54-70% and 61.4% among Chinese IDU. Contrary to that, higher prevalence of HCV (97.3%) in IDU was found in Mauritius. However, IDU was never a significant factor for HCV incidence, as only 0.2% and 6% HCV infectivity was noticed in Congo15 and South-west Nigeria16. Our results are not in accordance with some of the earlier data at domestic level, presenting 8-17.3% HCV prevalence in IDU in Abbottabad and Rawalpindi.

It is noteworthy that most of the HCV positive patients claimed to be either IDU or blood donors and very few acknowledged their sexual trends as the causative factor for infectivity. Self-described patient's history can be biased and should be considered with caution.

Conflict of interest statement

We declare that we have no conflict of interest.

References
