

Evidence of Hepatitis C Virus Infection and Associated Treatment in Nepal

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Abstract

Hepatitis C, a liver disease caused by the hepatitis C virus can be acute and chronic infection. Most of the studies conducted in Nepal are focused on the prevalence of hepatitis C Virus. It detects active disease only but does not detect the infections of the past which became immune naturally. The present study hence was conducted to determine the prevalence and the epidemiological characteristics of Hepatitis C. The research was carried out in Sukraraj Tropical and Infectious Disease Hospital/Teku Hospital, Kathmandu, Nepal. The prevalence of hepatitis C virus (HCV) infection was 2700 number of HIV infection patients. An Analysis was conducted, and included calculation of hepatitis C infection by each variable of interest, including sex, age, profession, marital status, history of jaundice by the patient, invasive procedure, and history of blood transfusion and providing medicines and liver biopsy test. The result showed that there was a low frequency of HCV in all the patients infected with HIV. In Teku Hospital, 100 among 2700 patients were infected with hepatitis C (3.703%). This suggests that preventive measures for this disease can improve the situation significantly.

Presently, Teku Hospital uses antiviral drugs, vitamin complexes and common Anti-inflammatory, Anti-pyretic drugs to provide immediate relief to the patients. But in absence of interferon in the treatment, the patients don't get proper respite. For betterment of the situation, interferons like (Pegylated Interferon) and Ribavirin should be included in the list of essential drugs in Nepal, along with implementation of proper preventive measures against HCV.

Keywords: Hepatitis C virus; Carcinoma

Abbreviations

HCV: Hepatitis C Virus; HCC: Hepatocellular Carcinoma; HIV: Human Immune deficiency Virus; RNA: Ribo Nucleic Acid; CLH: Chronic Lobular Hepatitis; CAH: Congenital Adrenal Hyperplasia; CPH: Corposes per Hour; ALT: Alanine amino Transferase; ELISA: Enzyme-linked Immunosorbent Assay; RIBA: Recombinant Immunoblot Assay; HBV: Hepatitis B Virus

Introduction

Hepatitis is a global word eloquent inflammation of the liver and engender by variety of viruses like A, B, C, D and E. In 1989 the virus liable majorly transfusion associated non-A and non B was termed Hepatitis C virus [1-3]. Hepatitis C is the result by infection with hepatitis C virus, an immured single stranded, positive sense RNA virus. [2-4]. The virus spread among liver cells and damage the liver with long term complications [5]. Hepatitis starts with anorexia, huge abdominal discomfort, fever and lethargy, debility, nausea and vomiting progressing to jaundice in about 25% patients and is generally less frequent as compared to hepatitis B [5-8]. Those who are vulnerable to HCV, about 40% regain health but rest become chronic carriers. And 20% of these evolved in cirrhosis and then developed liver cancer [5,6].

Hepatitis C in today's context is the most occurred disease in the world as it refers to the inflammation of the liver. In this case, liver is totally damaged which leads to the accumulation of inflammatory cells. Acute Hepatitis and Chronic Hepatitis are two different phases of Hepatitis. HCV which is called as a viral disease which is caused by the exposure of infected blood from the infected person transferred into the healthy body.

The main transmission route of this HCV is parental route, perinatal contact and sexual route. Mainly High risk group include different sectors of people especially health care workers, sex workers, homosexuals, heterosexuals with multiple partners, intravenous drug addicts and child born to HCV-positive mothers etc [1]. Prevalence

of Anti-HCV among the general population of Nepal and the blood donors has been reported which ranges from 0.3% to 1.7%.

In context to Nepal, after visiting all the hospitals of Kathmandu, lack of concentration of required subjects in general hospitals, Teku Hospital is finally selected for research. During the tenure of a month 2700 HIV patients were studied among which 100 of them had been infectious with mostly Hepatitis C virus and Hepatitis B virus [9-12].

Mostly, the treatments of Hepatitis C were conducted in India or they order the Interferon from India and, prevalence of HCV surface antigen among different people, detects only the active disease and it does not detect those who were infected and became immune naturally [13]. So, our recent study was based on to find out the epidemiological characteristics and prevalence of Hepatitis C among the different samples of patients in Teku Hospital, Kathmandu.

Aim of this study

1. To determine the prevalence of hepatitis C virus in patients of Teku hospital, Kathmandu, Nepal.
2. To find out the distribution of HCV infection with reference to study variables such as age, sex, type of worker, marital status etc.
3. To identify the treatment available in current scenario in Nepal

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Materials and Methods

Teku Hospital, Tribhuvan University Teaching Hospital, Nepal Red Cross Society (Nepal Blood Bank) is prominent Health centers of Nepal which serves as a primary facility as well as tertiary referral center. The patients for the study purpose were defined as any personnel coming in contact with HIV or other such chronic liver disease and jaundice [14-18]. The subjects of study were approached at sites of convenience, asked to fill a questionnaire, and assessed diagnostic test of Hepatitis C virus for all patients. Before contacting individual patient, the protocol of study was presented in the Teku hospital and got it approved. Each participant was informed of their test individually. In study, the past medical history of patients was taken since 2002 to 2012 till now, and regarding Nepal Blood Bank, Annual Progress Report of medical year 2011/012 is accessed for reference [19-22].

Questions to be asked to patients are based on following:

1. Demographics including age, Sex, profession, Marital status, Referred by Education
2. Past History including Jaundice and other sexual activities, History of Surgery
3. Family history like HBV/HCV or other type of hepatitis in family
4. Anti HCV test by ELISA or Screening Test
5. Investigations of Normal serum level
6. Liver Biopsy or Liver Ultrasound.

Statistical Analysis

The questionnaire collected was entered into database. Simplest data analysis technique is used and it include calculation of hepatitis C infection by each variable of interest, including sex, age, profession, marital status, history of jaundice, invasive procedure and history of blood transfusion. All available information on each variable was used. Age and total number of years of exposure were analyzed as continuous variables in the model by grouping the data. Age categorized as less than or equals to 29, 30-39, 40-49, 50-59 and ≥ 60 yrs and total years of exposure of disease categorized as less than or equals to 5, 6-10, 11-15 and greater than or equals to 16 years is taken in account for grouping.

Demographics

2700 patients study in Teku Hospital and annual report (2011/2012) in Nepal Blood Bank, Kathmandu was analyzed. All the questionnaires were properly filled and have complete information for analysis. We did this study on patient who had age between 22 to 45 years and they were suffering from hepatitis from last 10 years, 7 years and 6 years and we plotted our data accordingly.

Prevalence of HCV

There was a frequency of HCV in all the patients infected with HIV. According to the Research done in Teku Hospital 100 among 2700 patients were infected with hepatitis C. As well as the annual report from Nepal Blood Bank, among the collected samples from 85 centers in 62 districts, 685 people are infected (Table 1 and Figures 1-3).

Reports from Nepal Red Cross Society

Laboratory investigations: In the blood bank when they provide safe blood and blood products to needy patients, then at that time they do all the routine test for Cross matching HIV, HBsAg, HCV, Syphilis and anti-D antibody identification and titration in center. Kathmandu,

Chitwan, Bhaktapur and Pokhara these cities produced blood products like plasma, packed red cells, platelets, cryo-precipitates, platelet rich plasma they provide services to the patients of hemophilia and other blood disease. Blood Component production technology is sensitive and expensive: we couldn't access this facility in all blood centers. In near future some other districts and regional blood centers are also going to provide this service. Timely detection of Transfusion Transmissible infections is being focused and each unit of blood collected is well-tested.

Characteristic	Number of HCV +	Number of years of experience
Sex		
Male	60	10
Female	40	7
Age Class		
≤ 29	10	5
30—39	20	7
40—49	50	10
≥ 50	20	9
Jaundice		
Yes	20	
No	80	
Blood Transfusion		
Yes	5	
No	0	
Universal Precaution		
Sometimes	10	
Always	0	

Table 1: Distribution of study according to Teku Hospital

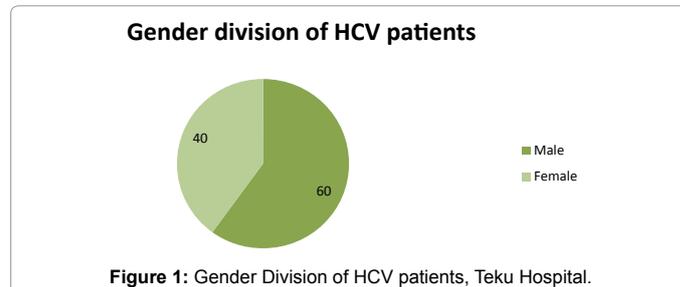


Figure 1: Gender Division of HCV patients, Teku Hospital.

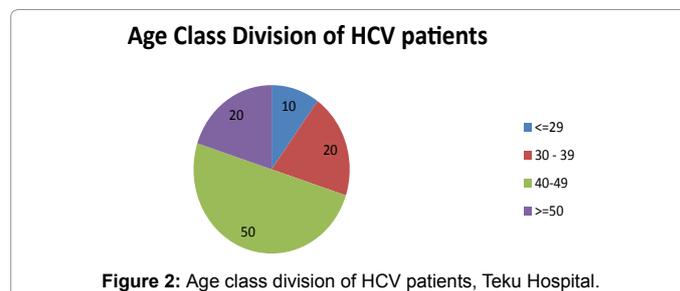


Figure 2: Age class division of HCV patients, Teku Hospital.

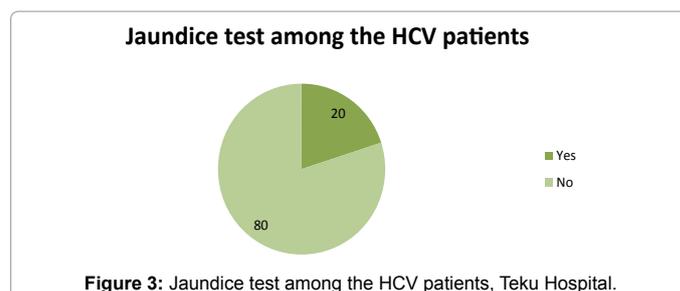


Figure 3: Jaundice test among the HCV patients, Teku Hospital.

Blood group percentage: Blood group percentage of blood donors are as given below (Table 2 and Figures 3-5).

District and peripheral blood centers and hospital units in Nepal: The Nepal Red Cross Society, as stated above, was able to collect 1, 77,503 units of blood during the period which was an increase of about 4.5% over the collection of the previous year. Among the blood donors male constitutes 84.4% and female 15.6% (Tables 3 and 4).

Sex distribution of the blood donors: National wise sex distribution of blood donors are given in Table 5.

Discussion

In land lock country like Nepal, open land route facilitate the biological and virological spread of diseases. So is the case of HCV, millions of migrant workers act as a biological transporter. However documentation of HCV with past infection is frequent in person with routine parenteral exposures; indicate that the transmission by this line is prominent. Accidental Parenteral exposures such as Needle-stick injuries are quite common in patients. Another route of transmission is having Tattoos, drug addicts, heterosexual and homosexual sex, liver diseases, and blood transfusion.

The significantly higher prevalence of HCV, about 60 to 70 people was from low budget workers working in India and totally illiterate. Other important factors are the low socio economic status of this group and lack of knowledge on the modes of transmission of the disease. Frequent contact with sharp instruments including hollow-needles during their disposal and spillage contaminated with blood and body fluids occur in course of work. In Primary prevention programme

Blood Group	National		In Kathmandu	
	%positive	%Negative	%positive	%Negative
A	28.4	0.8	30.5	0.7
B	36.5	0.9	25.0	0.8
O	28.9	0.9	32.0	0.8
AB	13.2	0.4	9.9	0.3
Total	97.0	3.0	97.4	2.6

Table 2: Red Cross Society, Annual Progress Report 2011, 2012.

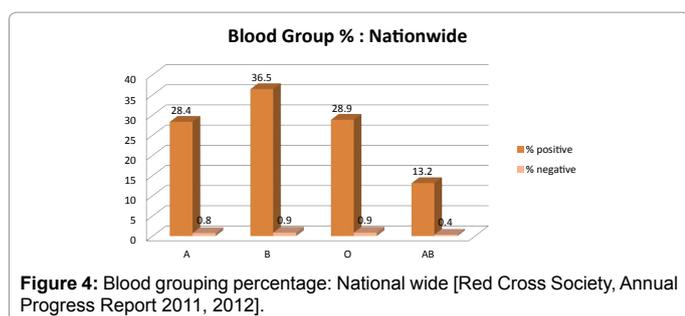


Figure 4: Blood grouping percentage: National wide [Red Cross Society, Annual Progress Report 2011, 2012].

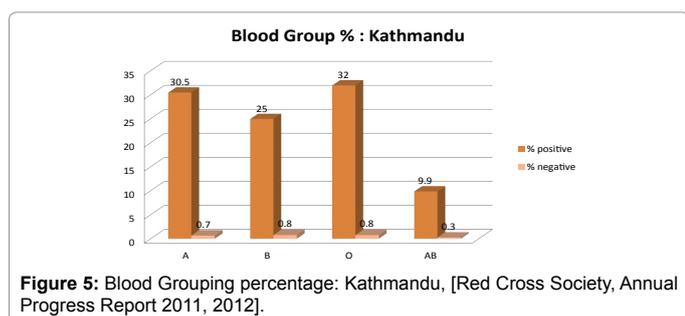


Figure 5: Blood Grouping percentage: Kathmandu, [Red Cross Society, Annual Progress Report 2011, 2012].

Central	1	Kathmandu
Regional Centre's	4	Pokhara, Biratnagar, Nepalgunj, Chitwan
District Centre's	21	Illam, Jhapa, Sunsari, Terhathum, Saptari, Siraha, Dhanusha, Parsa, Makwanpur, Nawalparasi, Bhaktapur, Kavre, Baglung, Rupandehi, Dang, Surkhet, Bardiya, Jumla, Kailali, Kanchanpur, Panchthar
Emergency unites	31	Damak, Okhaldunga, Solukhumbu, Sankhuwasabha, Ramechhap, Sindhupalchok, Pyuthan, Arghakanchi, Rautahat, Nuwakot, Gorkha, Gulmi, Dailekh, doti, Taplejung, Myagdi, Dolakha, Udayapur, Salyan, Dhankuta, Sarlahi, Bajhang, Baitadi, Syanja, Bara, Bhojpur, Khotang, Rolpa, Bajura, Kalikot.
Hospital Units	28	Bir hospital, Maternity Hospital, T.U Teaching Hospital, Patan Hospital, Kathmandu Medical college, Mission Hospital, Sheer Memorial Hospital, Kanti children Hospital, Nepal military Hospital, Nepal Police Hospital, Nepal Medical College, Shahid Gangalal National Heart centre, Manipal medical college, Universal Medical college, National medical college (Birgunj), Dr.Megh Bdr.Parajuli community Hospital (Illam), District Community Hospital (Lamjung), Padma Hospital (Kailali), Tikapur PHC (Kailali), Team hospital (Dadeldhura), District Hospital (Achham), District Hospital (Humla), BPKM cancer Hospital (Chitwan), Janaki medical College (Dhanusha), Nepalgunj Medical College (kohalpur), Lumbini Medical College (palpa), Kist Medical College, Amda Hospital (Jhapa)

(In Nepal we have 85 centers in 62 districts)

Table 3: Lists of centers and district hospitals, [Red Cross Society, Annual Progress Report 2011, 2012].

SN	Centers	HIV	Hepatitis C
1	Central blood Transfusion Centre	213	451
2	Regional Blood Transfusion Centre	216	115
3	District/Emergency Blood Transfusion Centre	22	107
4	Hospital Blood Transfusion Unit	2	12
Total		263	685
% of positivity in Kathmandu Valley		0.31	1.0
Total positive percentage nationwide		0.14	0.38

Table 4: No of HIV and Hepatitis C detected in the collected Blood during the period, [Red Cross Society, Annual Progress Report 2011, 2012].

Sex Distribution	Nationwide
Male Donor	84.4%
Female Donor	15.6%

Table 5: Sex distribution national wise, [Red Cross Society, Annual Progress Report 2011, 2012].

we focus to devaluate the transmission of the virus. In prevention programmes we should educate the person, who has chances to acquire the viral infection; we should counsel such persons that how they reduce the chances to get viral infection we should tell them about HCV screening and harmful effects of drug abuse.

We need to provide more attention and care to populations at correctional institutes. Drug treatment programs and also arrange programs for youth to aware them about HCV, HIV Counseling and screening centres and also at STD clinics. In such places physicians usually prefer intravenous drug use. In the educating process our main focus should be on addiction care by help of psychotherapy and detoxification. Always use safe and sterilize instrument and injections to reduce chances for percutaneous exposure to blood. In developing countries we must screen the blood of donor with patient in this way screening reduce the transmission of HIV through transfusion.

Treatment (Medications used especially in Nepal)

In Nepal, we focused mainly in Teku hospital where we found maximum HCV patients. A one month long research regarding this

Hepatitis C and the treatment procedure in Nepal was conducted. At present interferon are not used in Nepal. In any emergency case, the patients are referred to India. The most prescribed medicines are: Tenofovir, Stavudine, Lamivudine, Stavudine, Nevirapine Bacterium, Vitamin/C capsules, Efavirenz, Abacavir.

Following are the available services for Hepatitis C

1. Cost expense of HCV antibody screening is US \$2.00
2. Some Pharma company provide free HCV RNA screening test but it is not at large scale.
3. In Nepal we do not have facilities to treat HCV, so they move to other countries to treat their HCV infection. Due to reduce resources we don't have reach to HAV and HBV vaccination.
4. Medication therapy available in Nepal are AZT (Azidothymidine), 3TC (Lamivudine) and Nevirapine and in second line we have only ARV.

The usual prescribed for HCV is HAART (Highly Active Antiretroviral Therapy) regimen is a combination of Zidovudine 300 mg, Lamivudine 150 mg and Nevirapine 200 mg. Course of drug prescribed is that you take Zidovudine 300 mg, Lamivudine 150 mg for 14 days and after that twice a day (BD) and Nevirapine 200 mg once daily (OD).

Then after, patient should start taking Nevirapine 200 mg BD twice a day. Second common prescribed regimen comprises of a combination of ZDV 300 mg, 3TC 150 mg, this combination should to be taken BD along with Efavirenz (EFV) (600 mg or 800 mg) which is taken before sleep. Combination of Stavudine (d4T) 30 mg, 3TC 150 Mg and NVP (Nevirapine) 200 mg is preferred when ZDV (did not become the initial choice).

Conclusion

Emphasis should be made to prevent the occupational health in patients, by creating awareness on the risk of HCV infection, especially to the illiterate and Non-Professional health care workers, following strict compliance with Universal precautions especially using one-hand technique for recapping needles and decontamination of sharp instruments before cleaning them by non-professional workers. The awareness campaign for cross boarder migrant workers could be conducted so as to educate them about HCV and the ways to prevent it.

Suggestions to improve the HCV therapy

Government should take positive steps for betterment of public health by providing free HCV antibody test and also offer follow up diagnostic tests on daily basis and add Pegylated interferon and Ribavirin in the essential medicines list of Nepal.

Government should organize workshops on HIV/HCV co-infections for policy makers which include CCM (Comprehensive Care Management) members, Health Ministerial Secretary and also for other institutions which take steps to provide better and effective therapy to HCV patients.

Limitations needed so far

A comparison of the effectiveness of different antiviral drugs with the drugs in present use could put light on which would be advantageous for the mass. Another such comparison that could have helped make our results more concrete is between effectiveness of oral antiviral drugs in presence and absence of interferon. But due to lack of

proper resources, these analysis have been postponed. We can proceed these limitations for future Research Need Projects so far.

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