

# Qualitative Detection of Hepatitis C Virus in the Patients Going Through Eye Surgery

Kumar Mahesh (Corresponding author)

Key Laboratory of Molecular Biophysics of Ministry of Education, College of Life Science and Technology,  
Huazhong University of Science and Technology, Wuhan 430074, China  
Department of Ophthalmology, Sindh Institute of Ophthalmology and Visual Sciences (SIOVS) Hyderabad

Li Su

Key Laboratory of Molecular Biophysics of Ministry of Education, College of Life Science and Technology,  
Huazhong University of Science and Technology, Wuhan 430074, China

Khalid Iqbal Talpur

Department of Ophthalmology, Sindh Institute of Ophthalmology and Visual Sciences (SIOVS) Hyderabad

Aijaz Ali Khooharo

Sindh Agriculture University Tandojam

Adnan Nazir

College of Economics and Management, Huazhong Agriculture University, Wuhan, China

## Abstract

**Purpose:** This study was carried out to analyze the prevalence of hepatitis C Virus in patient going through eye surgery.

**Material and Method:** This was a prospective observational study conducted at the Sindh Institute of Ophthalmology and Visual Sciences (SIOVS) Hyderabad from July 2013 to June 2015. In this study, evaluation of 5600 patients of various ages undergoing eye surgeries and being unaware of hepatitis C infection were included. Each patient was serologically screened by immunochromatography (ICT method) for qualitative detection of antibodies for Hepatitis C before surgery.

**Result:** Two thousand two hundred sixty four (40.43%) patients were male and 3336 (59.57%) were female. Large numbers of patients were in 4th and 5th decade of life in both the sexes. Of these 5600 patients, 713 (12.73%) were serologically positive for hepatitis C antibodies. Majority of them were female (58.44%).

**Conclusion:** The prevalence of hepatitis C antibodies positive is higher in our population. Therefore, it is mandatory to screen every patient for hepatitis C and B before any surgical procedure. The surgeon and health care professional should take protective measures. The used infected materials should be destroyed properly.

## 1. INTRODUCTION:

Infection with Hepatitis C virus (HCV) is a major cause of Liver disease, cirrhosis and hepatocellular carcinoma. Hepatitis C virus is small, with a diameter of about 50 nm, enveloped, single stranded, positive sense RNA virus. The average incubation period is 7-8 weeks with a range of 2-26 weeks. It is primarily a blood borne or parenterally transmitted infection. Vehicles and routes of parenteral transmission include; contaminated blood and blood products, needle sharing, contaminated instruments (eg: in haemodialysis, re-use of contaminated medical devices, tattooing devices, acupuncture needles, razors) and occupational and nosocomial exposure. (2000; Jain et al. 2003; K. 2003; Mahmood and Iqbal 2008; Mileo et al. 2015)

Only a relatively small fraction of HCV infections are symptomatic. Most infected individuals remain asymptomatic but often it leads to jaundice, anorexia (poor appetite) and diarrhea and presumably it remains undiagnosed and leads to chronic carrier state. In these affected individuals; almost 70-85% develop chronic infection. (K. 2003; Naeem et al. 2012) It stands to reason that an occupational risk for transmission of HCV in the health care setting, where unknown carriers of HCV are undergoing different procedures, in which there is a chance of contact of percutaneous blood, including transmission from infected patients to staff, from patient to patient, and from infected providers to patients. (Alain et al. ; Mahmood and Iqbal 2008) Presence of anti HCV antibodies in blood indicate that the person is infected with Hepatitis C virus and may transmit the virus to others. (Mahmood and Iqbal 2008) Anti-HCV in hospitalized surgical patients is very high. There is a lack of routine serological screening prior to surgery which is one of the factors responsible for increased disease transmission. The major risk factors include; re-use of contaminated syringes, surgical instruments and

improperly screened blood products.(Naeem et al. 2012) Without meticulous attention towards infection control and disinfection and sterilization procedures, the risk for transmission of blood borne pathogens in the health care setting is magnified.

The study was conducted to find out the incidence of HCV antibodies in patients undergoing surgery at Sindh Institute of Ophthalmology and Visual Sciences (SIOVS) Hyderabad. This is one of the largest tertiary care centre in Sindh. This institution is a great referral centre for whole interior Sindh province.

## 2. MATERIAL AND METHODS

This prospective observational study was carried out at the Sindh Institute of Ophthalmology and Visual Sciences (SIOVS) Hyderabad from July 2013 to June 2015. A total of 5600 patients undergoing eye surgery, who were unaware of hepatitis C infection were included in this study. The blood samples of all these patients were taken in the institute laboratory Scientific Ophthalmic Diagnosis & Research Lab. Each patient was serologically screened, by using immunochromatography (ICT method) for qualitative detection of Hepatitis C virus antibodies, to find the carrier status of patients before surgery. Results, that were found positive on screening test, were confirmed by ELISA (Enzyme-Linked Immunosorbent Assay) method (4th generation ELISA). We entered all the data in SPSS version 16 and we measured the prevalence and percentage of all variables.

## 3. RESULTS

A total number of 5600 patients were operated during the study, two thousand two hundred sixty four (40.43%) patients were male and 3336 (59.57%) were female.

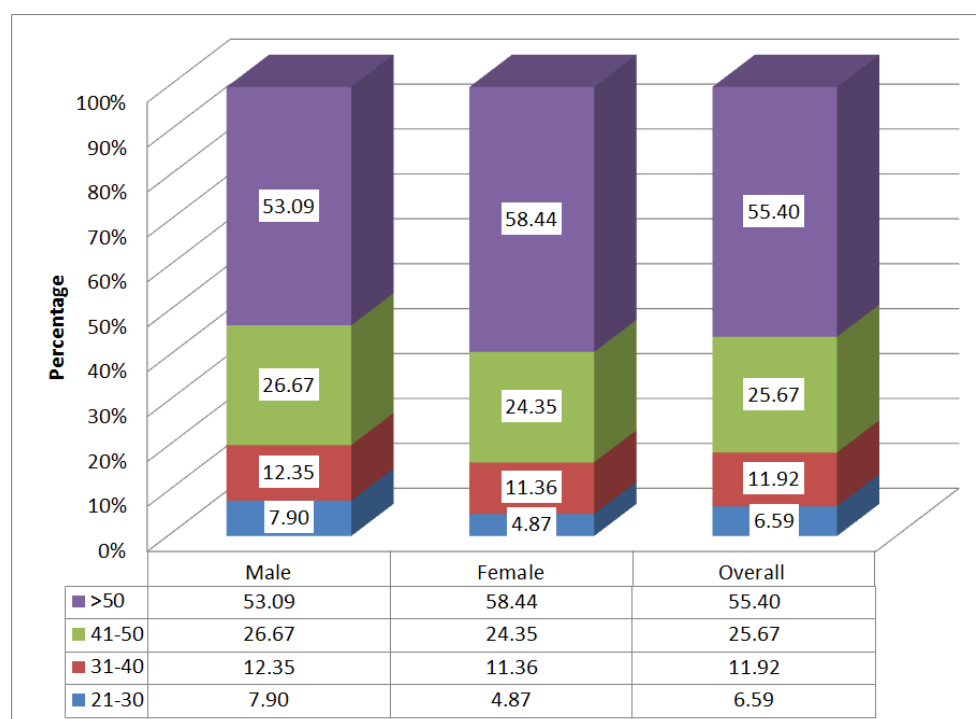
Of these 5600 patients, 713 (12.73%) were serologically positive for hepatitis C antibodies (Figure 1). Majority of them were female (58.44%).(Table 1). Large numbers of patients 578 (81.06%) were in 4th and 5th decade of life in both sexes. .(Figure 2)

**Figure 1: A: Serologically positive for hepatitis C antibodies  
B: Serologically negative for hepatitis C antibodies**



**Table 1: Incidence of Anti Hepatitis C in different age group**

Age Group	Male		Female		Overall	
	N	%	N	%	N	%
21-30	32	7.90	15	4.87	47	6.59
31-40	50	12.35	35	11.36	85	11.92
41-50	108	26.67	75	24.35	183	25.67
>50	215	53.09	180	58.44	395	55.40
Total	405	100.00	308	100.00	713	100.00



**Figure 1: Incidence of Anti Hepatitis C in different age group**

#### 4. DISCUSSION

In 1989 the virus responsible for most transfusion-associated non-A non-B hepatitis was identified and cloned, and named hepatitis C virus (HCV).(2000; Farci 2002) Shortly after the cloning of HCV, this new isolated virus was discovered to be the cause of approximately 90% of non A, non B hepatitis in the United States.(Jatoi, Narsani, and Kumar 2009)

HCV infections are common worldwide. According to World Health Organization (WHO) it is estimated to be approximately 3% corresponding to 170 million infected persons.(2000) HCV is responsible for 50-76% of all liver cancer cases, and two thirds of all liver transplants in the developed world.(Umar et al. 2010) It appears to be endemic in most parts of world. Regional variation exists in the prevalence of HCV infection from high endemic area to non-endemic area(Muhammad and Jan 2005). The prevalence of hepatitis varies from country to country. At times it will also vary among different regions of the same country. The epidemiological estimates by WHO show that the prevalence of hepatitis C is low (<1%) in Australia, Canada and northern Europe, and about 1% in countries of medium endemicism, such as the USA and most of Europe. It is high (>2%) in many countries of Africa, Latin America, Central and South-East Asia.(ul Huda et al. 2013) In Pakistan HCV is highly endemic and its incidence is increasing since last few years. The incidence of anti HCV Positive in our study is 12.73 % and our previous study was 29.60%(Jatoi et al. 2009). W Ul Huda et al(ul Huda et al. 2013) reported

17.33% incidence of HCV infection among their operated patients whereas study conducted by Khurum, M et al (Khurum 2003) reported 6% incidence of anti HCV antibodies in health care workers in a local hospital. Concerning demographic variables, the increase in the risk for HCV seropositive incidences increased with increasing age i.e 6.59% at the age of 20 to 30 years whereas 25.67% at the age of 40 to 50 years. In our study, the higher prevalence of hepatitis C were in the age range of 30 – 60 years, which is comparable to the study of Talpur, AA et., al (Talpur et al. 2006) in which 65% positive patients were above the age of 40 years. This study shows that the prevalence of hepatitis C is quite high. Doctors and paramedical staff in surgical practice are at high risk of acquiring blood borne diseases from the patients on whom they operate.

## 5. CONCLUSION

The aim of the present study was to assess the prevalence of HCV infection among preoperative patients. The incidence of hepatitis C antibodies positive is higher in our population. Therefore, it is mandatory to screen every patient for hepatitis C and B before any surgical procedure. The surgeon and health care professional should protect themselves by using protective mask, eye protection glasses, double gloves before handling infected cases. The used infected material, needles and other waste material should be destroyed properly using Biosafety protocols. Healthcare professionals should also be screened routinely as they are exposed to patient for long periods of time.

## ACKNOWLEDGEMENTS

We would like to extend special thanks to Hameem Naveed, Key Laboratory of Molecular Biophysics of Ministry of Education, College of Life Science and Technology, Huazhong University of Science and Technology, for their invaluable help and assistance in technical assistance in improving image quality.

## REFERENCES

2000. "Hepatitis C--global prevalence (update)." *Wkly Epidemiol Rec* 75(3): 18-9.
- Alain, S., V. Loustaud-Ratti, F. Dubois, M. D. Bret, S. Rogez, E. Vidal, and F. Denis. *Seroreversion from hepatitis C after needlestick injury*: Clin Infect Dis. 2002 Mar 1;34(5):717-9.
- Farci, P. 2002. "Choo QL, Kuo G, Weiner AJ, Overby LR, Bradley DW, Houghton M. Isolation of a cDNA clone derived from a blood-borne non-A, non-B viral hepatitis genome [Science 1989;244:359-362]." *J Hepatol* 36(5): 582-5.
- Jain, A., S. S. Rana, P. Chakravarty, R. K. Gupta, N. S. Murthy, M. C. Nath, S. Gururaja, N. Chaturvedi, U. Verma, and P. Kar. 2003. "The prevalence of hepatitis C virus antibodies among the voluntary blood donors of New Delhi, India." *Eur J Epidemiol* 18(7): 695-7.
- Jatoi, S. M., A. K. Narsani, and M. Kumar. 2009. "Frequency of Anti Hepatitis C Virus in Eye Surgery Patients at Tertiary Referral Center LUMHS." *Pak J Ophthalmol* 25(2).
- K., H. D. 2003. "Managing occupational risks for hepatitis C transmission in the health care." *Clin Microbiol Rev* 16(3): 546-68.
- Khurum, M. 2003. "Prevalence of anti-HCV antibodies among health care workers of Rawalpindi and Islamabad." *Rawal Med J* 28(1): 7-11.
- Mahmood, T. and M. Iqbal. 2008. "Prevalence of Anti Hepatitis C Virus (HCV) Antibodies in Cataract Surgery Patients." *Pak J Ophthalmol* 24(1).
- Mileo, A. M., S. Mattarocci, P. Matarrese, S. Anticoli, C. Abbruzzese, S. Catone, R. Sacco, M. G. Paggi, and A. Ruggieri. 2015. "Hepatitis C virus core protein modulates pRb2/p130 expression in human hepatocellular carcinoma cell lines through promoter methylation." *J Exp Clin Cancer Res* 34(1): 140.
- Muhammad, N. and M. A. Jan. 2005. "Frequency of hepatitis "C" in Buner, NWFP." *J Coll Physicians Surg Pak* 15(1): 11-4.
- Naeem, S. S., E. U. Siddiqui, A. N. Kazi, S. Khan, F. E. Abdullah, and I. Adhi. 2012. "Prevalence of hepatitis 'B' and hepatitis 'C' among preoperative cataract patients in Karachi." *BMC Res Notes* 5: 492.
- Talpur, A., A. Ansari, M. Awan, and A. Ghumro. 2006. "Prevalence of hepatitis B and C in surgical patients." *Pak J Sur* 22(3): 150-3.
- ul Huda, W., N. Jameel, U. Fasih, A. Rehman, and A. Shaikh. 2013. "Prevalence of Hepatitis B and C in Urban Patients Undergoing Cataract Surgery." *Pakistan Journal of Ophthalmology* 29(3): 147.
- Umar, M., H. T. Bushra, M. Ahmad, A. Data, M. Khurram, S. Usman, M. Arif, T. Adam, Z. Minhas, A. Arif, A. Naeem, K. Ejaz, Z. Butt, and M. Bilal. 2010. "Hepatitis C in Pakistan: a review of available data." *Hepat Mon* 10(3): 205-14.