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HEPATITIS C: A LEADING CAUSE OF CIRRHOSIS IN PATIENTS PRESENTING AT DHQ TEACHING HOSPITAL D.I.KHAN

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Background: Heptatic cirrhosis is a common condition in our country and because of its morbidity and mortality the financial implications of this disease are enormous for our health care system. Diagnosis of Cirrhosis, especially in the advanced stage, means ultimate progression to death due to the complications occurring in due course of the disease. It is therefore important to know about the main factors responsible for this condition so as to avoid or remove them before establishment of this deadly disease. Alcohol is an important cause of cirrhosis in the Western World but in developing countries hepatrotropic viruses namely Hepatitis B virus & Hepatitis C virus are mainly responsible for this condition. The aim of this study was to know about the recent situation regarding causation of this disease in our area and to make comparison with similar studies conducted previously.
Patients and methods: This study was conducted in department of medicine at DHQ Teaching Hospital D.I.Khan from 1st January 2003 to 30th April 2006. All cirrhotic patients attending this hospital were admitted in Medical Unit. Serum was tested for Hepatitis B surface antigen and for Hepatitis C virus antibodies by ELISA. A total of 336 patients were studied. Their variables were recorded and analyzed.
Results: Out of 336 patients, 190 (56.54%) were HCV positive, 102 (30.35%) were positive for Hepatitis B Surface antigen. Sixteen (4.76%) were having markers of both Hepatitis B & Hepatitis C virus indicating dual infection. In 28 (8.33%) patients there was no evidence of infection with either Hepatitis B or Hepatitis C virus. Two Hundred & Twenty Eight (67.85%) patients were male and 108 (32.15%) were females.
Conclusion: cases of cirrhosis due to Hepatitis C virus outnumber all other causes and the condition is more common in males.
Key words: Infection, cirrhosis, Hepatitis B virus (HBV), Hepatitis C virus (HCV), positivity.

Introduction: cirrhosis of liver results from persistent and longstanding damage to liver due to a variety of causes. In developing countries Hepatitis B virus (HBV) and Hepatitis C virus (HCV) are mainly responsible for the condition whereas in the West alcohol consumption is responsible for a significant number of cases of cirrhosis. However even in countries like United States HCV is the leading cause of death from liver disease[1] and more than 2.7 million people are having ongoing HCV infection.[2] Previously HBV was considered as the common cause of non-alcoholic cirrhosis but with the availability of screening tests for HCV, the situation seems to be different[3]. In Pakistan screening of blood donors have revealed prevalence of HCV as 0.5 to 14%[4,5]. The primary sources of HCV infection are infected blood or blood products. Although sex with infected partner, multiple sexual partners and perinatal exposure are other potential sources of HCV transmission[6,7,8], sexual transmission between monogamous partners is rare[9] and transmission at the time of delivery is 1 to 5%[10]. Additional risk factors for HCV transmission are folk medicine practices such as acupuncture, body piercing, tattooing and even commercial barbering[10]. Spontaneous cure of HCV infection occurs in 15 to 45% of patients[10]. The remaining patients remain HCV infected and 5 to 20% of these patients develop cirrhosis over a period of two or more decades[11,12]. Old age, male sex, associated alcohol consumption of more than 50gm/day, obesity and HIV co-infection increases the chances of progression to cirrhosis [13,14,15].
The increasing role of HCV in cirrhosis liver does not mean to underestimate HBV. It is estimated that 400 million people worldwide have chronic HBV infection[16], causing 0.5 to 1.2 million deaths every year and being the 10th leading cause of death worldwide[17]. Prevalence of HBV infection varies from 0.1% to 20% in different parts of the world [18], being 10% in Pakistan[19]. Although mode of transmission of HBV and HCV resemble each other, sexual transmission and perinatal transmission are more common in HBV infection [18,20]. Patients with chronic HBV infection have a 15% to 40% risk of developing cirrhosis[21], liver

failure or hepatocellular carcinoma[20]. Because of increased risk of hepatocellular carcinoma in cirrhotic patients with HBV[21] and HCV[22] many research workers regard cirrhosis as premalignant condition.
As alcohol consumption is not a common practice in our patients, therefore majority of the patients in this part of the world have cirrhosis either because of HBV or HCV infection or other non-infectious causes. A previous study conducted in this department showed very low frequency of HCV in cirrhotic patients. The aim of this study was to know about the recent situation in this area and to make comparison with the study carried out in this center in the past and studies of similar nature carried out at other centers.

Patients and methods: the study was carried out in medical unit of District Headquarter (DHQ) Teaching Hospital, Dera Ismail Khan (D.I.Khan) over a period of 3 years and four months i.e from 1st January 2003 to 30th April 2006. All the cirrhotic patients, whether newly diagnosed or known cirrhotic and attending this hospital for the first time, were included in the study. These patients belonged to different areas of District D.I.Khan and adjacent districts and tribal areas. A total of 336 patients were studied. Diagnosis was made by stigmata of chronic liver disease, abdominal ultrasound and liver biopsies (if not contraindicated). Venous blood was taken and serum was tested for Hepatitis B surface antigen (HBs Ag) by ELISA and Hepatitis C virus antibodies (HCV Ab) by third generation ELISA. In all patients with ascites, ascitic fluid was examined for spontaneous bacterial peritonitis (SBP). Other investigations were done according to the presentation of the patients and treatment was given accordingly. Variable were recorded, analyzed and comparison was made with other studies.

Results: Out of 336 patients that were studied, seromarkers for HBV and HCV were as shown in Table–1. One Hundred and Ninety (56.54%) were HCV positive comprising 133 (58.33%) male patients and 57 (52.77%) female patients. One hundred and two (30.35%) were positive for HBs Ag, 68 (29.82%) being male and 34 (31.48%) being female. In 28 (8.33%) patients there was no serological evidence of either HBV or HCV infection. Included in this group were 17 (7.45%) male and 11 (10.18%) female patients. Sixteen (4.76%) patients were having dual infection with HBV and HCV, 10 (4.38%) being male and 6 (5.55%) being female. Thus out of 336 patients, 228 (67.85%) were male and 108 (32.14%) were female. Age range was from 16 to 98 years, mean age being 56.2 years. More than 70% of the patients were in the age group 45 to 75 years.

Table – 2 shows the presenting features and complications in these patients. Ascites was the most common presentation of these patients being present in 256 (76.19%) patients comprising 153 (67.10%) male and 103 (95.37%) female patients either alone or in association with other complications. Varying grades of encephalopathy were present in 142 (42.26%) patients, 90 (39.47%) being male and 52 (48.14%) being female. Haemetemesis and or malaena was present in 106 (31.54%) patients, 72 (31.57%) being male and 34 (31.48%) being female. SBP occurred in 46 (13.69%) patients, 30 (13.15%) being male and 16 (14.81%) being female. Hepatorenal syndrome was the complication in 38 (11.30%) patients, 21 (9.21%) being male and 17(15.74%) being females. Hepatocellular carcinoma was the least common complication affecting 23 (6.84%) patients, 13 (5.70%) being male and 10 (9.25%) being female. Female contributed less to the total number of patients, otherwise neither the viruses nor the complications of cirrhosis have got any regard for sex.

Table – 1 Serological markers of HBV and HCV in cirrhotic patients (No. 336)

Serological Markers	Male (228)		Female (108)		Total (336)	
	No.	% age	No.	%age	No.	%age
HCV Ab	133	58.33	57	52.77	190	56.54
HBs Ag	68	29.82	34	31.48	102	30.35
No markers	17	7.45	11	10.18	28	8.33
Dual Infection	10	4.38	6	5.55	16	4.76

Table - 2 Presenting Features and complications in Cirrhotic patients (No. 336)

Presentation	Male (228)		Female (108)		Total (336)	
	No.	% age	No.	%age	No.	%age
Ascites	153	67.10	103	95.37	256	76.19
Encephalopathy	90	39.47	52	48.14	142	42.26
Haemetemesis and or Malaena	72	31.57	34	31.48	106	31.54
SBP	30	13.15	16	14.81	46	13.69
Hepatorenal syndrome	21	9.21	17	15.74	38	11.30
Hepatocellular carcinoma	13	5.70	10	9.25	23	6.84

Discussion: This study has shown that HCV is more common than HBV infection in patients with cirrhosis and that patients having dual infection with HBV and HCV are least common. This is in accordance with studies conducted at other centers. One of these studies[3] has shown HCV Ab and HBs Ag positivity as 52% and 24% respectively, dual infection with HBV and HCV as 8% and patients having no evidence of either infection as 16%. Studies carried out by Nadeem et al[23] showed HCV Ab positivity of 55% compared to HBs Ag psotivity of 23%. Nine percent were positive for both HBV and HCV and in 13% patients the cause remained unknown. HCV Ab positivity of more than 50% has also been reported in another study[24]. However the results of the present study are in sharp contrast to the study we conducted[25] in this department a few years back. This previous study showed that a large number (44.6%) of cirrhotics were HBs Ag positive followed by patients having no serological evidence of HBV and HCV. Patients with HCV alone were responsible for only a small number (13.3%) of cirrhotic patients.
The reasons for this difference could be the following.

1. As there were only sixty patients in the previous study (compared to 336 in the present study) therefore there are increased chances of random error in the previous study because of the small size of the sample.
2. With increasing awareness, vaccination against HBV is increasing so that spread of HBV and therefore contribution of HBV to cirrhosis is decreased. However in case of HCV no effective vaccine is available. This can result in increasing cases of HCV in peoples at risk. Progression of disease in these cases will mean increasing cases of cirrhosis due to HCV.
3. HCV is a comparatively newly diagnosed virus, identified 1st in 1988[26] and with the passage of time we will know more about various aspects of this disease. This may help in knowing about the increasing role of HCV in cirrhosis.
4. The method used for screening for HBV and HCV in the previous study was immunochromatographic technique (ICT), one step device (Acon Laboratories)[25] and in this present study ELISA was used for detection of HBV and HCV. The sensitivity and specificity of ICT is less then that of ELISA and the manufacturer recommendations are that a negative test for HBs Ag and HCV Ab does not preclude the possibility of HBV and HCV infection respectively. A false negative ELISA can occur in newly diagnosed patients (antibodies not yet developed), and in immuncompromised patients such as HIV infection and chronic haemodialysis[27]. However the patients in our study belonged to non of these groups & therefore ELISA in these patients should be considered accurate. This difference in the method used may be one of the factors responsible for large number of cases (40%) having no markers of either HBV or HCV and small number (13.33%) cases of HCV in the previous study compared to 8.33% with no markers of either infections and 56.54% HCV Ab postivity in the present study.

Male patients were more than female patients in all these studies. This could be either because of greater exposure of males due to their occupation or other life activities or because of underutilization of health resources by females so that they escape detection and remain unreported.

Conclusion & recommendations: HCV infection is a leading cause of cirrhosis in this part of the world and male cases outnumber females cirrhotic in HBS Ag positive, HCV positive, patients with dual infection as well as patients having no markers of either infection. The magnitude of the problem, especially due to HCV, could be decreased in various ways.

1. As presently we are having no effective vaccines against HCV, therefore attention should be paid to the detection of HCV infection before it becomes irreversible so that the condition could be treated by appropriate therapy with interferon and ribavirin. All high risk individuals should be screened for HCV infection.
2. In order to prevent the spread of infection, HCV infected persons should be advised not to share toothbrushes and dental or shaving equipment, to cover any bleeding wound in order to keep the blood away from others, to avoid reusing syringes, needles and cotton and to dispose these safely after one use. HCV infected persons should not donate blood, body organs or other tissues.
3. Public awareness regarding spread of the disease and avoidance of risk factors is needed. Important in this regard are routine screening of blood before transfusion, safe sexual practices, use of sterilized and disposable syringes and needles, proper sterilization of instruments used in surgery, dentistry and in diagnostic and therapeutic procedures involving contact with blood and body fluids. Precautions should be taken by doctors, nursing staff and laboratory personnel while handling HCV infected blood or body fluids. Education of the community regarding hazards associated with barbering body piercing, tattooing and acupuncture is also important.

REFERENCES:

1. Kim WR. The burden of hepatitis C in United States. Hepatology 2002; 36 (Suppl 1): S30 – 34
2. Alter MJ, Kruszon-Moran D, Nainan OV, McQuillan GM, Gao F, Moyer LA, Kaslow RA, et al. The prevalence of hepatitis C virus infection in the United States, 1988 through 1994. N Engl J Med 1999 ; 341 : 556-62.
3. Hussain I, Nasrullah M, Shah AA. Prevalence of hepatitis B and C viral infections in liver cirrhosis in Pakistan. Pakistan J Gastroenterol 1998; 12(1-2).
4. Mujeeb SA, Aamir K, Mahmood K. Seroprevalence of HBV, HCV and HIV infections among college going First Time Voluntary Blood Donors. J Pak Med Assoc 2000; 50: 269-70.
5. Rehman K, Khan AA, Haider Z, shafqat A, Iqbal J, Khan RU. Prevalence of Seromarkers of HBV and HCV in health care personnel and apparently healthy blood donors. J Pak Med Assoc 1996; 46:152-4
6. Puro V, petrosillo N, Ippolito G. Risk of hepatitis C seroconversion after occupational exposure in health care workers. Am J Infect control 1995; 23: 273-7.
7. Recommendations for prevention and control of hepatitis C virus (HCV) Infection and HCV related chronic diseases. Centers for Disease Control and Prevention, MNWR recomm Rep 1998; 47 (RR-19): 1-39.
8. Jones MM. Children with hepatitis C. Hepatology 2002; 36 (Suppl 1): S173-8.
9. Terrault NA. Sexual activity as a risk factor for Hepatitis C. Hepatology 2002; 36 (Suppl 1) S99-105.
10. Strader DB, Wright T, Thomas DL, Seeff LB. Diagnosis, Management and Treatment of Hepatitis C. Hepatology 2004;39:1147-71.
11. Strader DB, seeff LB. The natural history of chronic hepatitis C infection. Eur J Gastrenterol hepatol 1996;8:324-8.
12. Seeff LB, Hoofnagle JH. National Institute of Health Consensus Development Conference: management of Hepatitis C: hepatology 2002; 36 (Suppl 1) S1-2.
13. Benhamou Y, Bocher M, Di Martino V, Charlotte F, Azria F, Coutellier A, Vidaud M et al. Liver fibrosis progression in Human immunodeficiency virus and hepatitis C virus co-infected patients. Hepatology 1999;30:1054-8.
14. Poynard T, Bedoosa P, Opolon P. Natural History of Liver Fibrosis Progression in Patients with chronic hepatitis C. Lancet 1997; 349:825-32.
15. Harris DR, Gonin R, Alter HJ, Wright EC, Buskell ZJ, Hollinger FB et al. the relationship of acute transfusion-associated hepatitis to the development of cirrhosis in the presence of alcohol abuse. Ann Intern Med; 2001;134:120-4.
16. Kowdley KV. The Cost of Managing Chronic Hepatitis B infection: A Global Perspective. J Clin Gastroentrol 2004; 38 (10 Suppl): S132-3.
17. Lavanchy D, Hepatitis B virus epidemiology, disease burden, treatment and current and emerging prevention and control measures. J Viral Hepat 2004; 11,97-107.
18. Alexander J, Kowdley KV. Epidemiology of Hepatitis B. Clinical Implications. Medscape Gen Med 2006; 8(2):13-18.
19. Malik IA, Legters LJ, Luqman M, Ahmad A, Qamar MA, Akhtar KK et al. The serological markers of hepatitis A and B in healthy populations in northern Pakistan. J Coll physician Surg Pak 2002; 12:240-2.
20. Shepard CW, Finelli L, Fiore AE, Bell BP. Epidomiology of hepatitis B and hepatitis B virus infection in United States Children. Pediatr infect Dis J. 2005;24:755-60.
21. Lok AS, Mc Mahon B. Chronic hepatitis B. Hepatology 2001;34:1225-41.
22. Fattovich G, Giustina G, Degos F, Diodati G, Tremolada F, Nevens F, et al. Effectiveness of interferon Alfa on incidence of hepatocellular carcinoma and decompensation in cirrhosis type C. European concerted Action on Viral Hepatitis. J Hepatol 1997; 27:201-5.
23. Nadeem MA, Waseem T, Sheikh AM, Grumman N, Irfan K, Hasnain SS, Hepatitis C virus: An Alarmignly increasing cause of liver cirrhosis in Pakistan. Pakistan J Gasteroenterol 2002; 16(1):3-8.
24. Shaikh MA, Shaikh WM, Solangi GA, Abro H. Frequency and transmission mode of Hepatitis C virus in Northern Sindh. J Coll physician Surg Pak 2003; 13(12):691-3.
25. Mahsud I, Khan H, Khattak AM, Relative frequency of Hepatitis B and C viruses in patients with hepatic cirrhosis at DHQ Teaching Hospital D.I.Khan. J Ayub Med Coll 2004;16(1):32-4.
26. Bonkovsky HL, Metha S; A review and update. J Am Acad Dermetol 2001;44(2);159-79.
27. Pawlotsky JM. Use and interpretation of Virological Tests for hepatitis C. Hepatology 2002;36(Suppl 1) S65-73.

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