

# HEPATITIS 'B' AND 'C' PREVALENCE IN ORTHOPAEDICS PATIENTS

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**ABSTRACT: Background:** Hepatitis B and C is a global problem. The prevalence of hepatitis B and C in orthopedic patients is quite high with the common risk factors: previous history of surgery or blood transfusion. **Objectives:** The objectives of this study were to, "Find out the prevalence of Hepatitis B and C and their risk factors in patients admitted in Orthopedic Unit of Sheikh Zayed Medical College Hospital Rahim Yar Khan.". **Design & Duration:** This was a prospective cohort study. The duration was from July 2009 to December 2009. **Patients and Methods:** This study was conducted in Orthopedic Department of Sheikh Zayed Medical College Hospital Rahim Yar Khan. Patients of either sex and of all ages who were undergoing orthopedic surgery were included in the study. All patients underwent screening for Hepatitis-B and Hepatitis-C and confirmed by Elisa method in positive patients. Data regarding age, sex, HBV, HCV was noted and analyzed by SPSS version 14. **Results:** Among 745 patients. 581 (77.98%) were male and 164 (22.02%) were female. Hepatitis B and C was present in 165 (22.15%) patients. Out of these positive cases 125 (75.76%) were suffering from hepatitis C and 36 (21.81%) were suffering from hepatitis B, and 4 (2.43%) patients were positive for both HBV & HCV. Among the predisposing factors previous history of surgery was positive in 39 patients; history of blood transfusion in 27 patients, dental procedure was in 17 patients' and 123 patients having injection therapy in the past. **Conclusions:** All the patients who need surgery should be properly screened for HBV and HCV. It is also necessary that separate operation theaters and instruments should be used for HBV and HCV positive cases.

**Key words:** Orthopedic patients, HBV and HCV, public health problem.

## INTRODUCTION

Hepatitis means "inflammation of the liver", and the most common cause is infection with one of 5 viruses, called hepatitis A,B,C,D, and E. All of these viruses can cause an acute disease with symptoms lasting several weeks including yellowing of the skin and eyes (jaundice); dark urine; extreme fatigue; nausea; vomiting and abdominal pain. It can take several months to a year to feel fit again<sup>1</sup>.

Hepatitis B virus (HBV), a DNA virus of the family hepadnaviridae is the causative agent of hepatitis B infection<sup>2</sup>. It is 50 - 100 times more infectious than HIV and 10 times more infectious than hepatitis C virus (HCV) with many carriers not realizing they are infected with the virus, thus referred to as a "silent killer"<sup>3</sup>. The minimum infectious dose is so low that such practices like sharing a tooth brush or a razor blade can transmit infection<sup>4</sup>. HBV also shares similar routes of transmission with HIV<sup>5</sup>. The virus has been detected in peripheral mononuclear cells, tissues of pancreas, spleen, kidney and skin, and fluids like saliva, semen, sweat, breast milk, tears, urine and

vaginal secretion<sup>6</sup>. Approximately 350 million people are infected with HBV worldwide<sup>7</sup>. Hepatitis C virus is an RNA virus of the flavi-viridae family and appears to have humans and chimpanzees as the only species susceptible to its infection<sup>8</sup>. About 170 million people are infected with HCV worldwide<sup>9</sup>. It has also been detected in semen and saliva<sup>10</sup>. The risk of vertical transmission is 6% and 25% in mothers who are only HCV positive and in those who are HCV/HIV positive respectively<sup>11</sup>.

Pakistan carries one of the world's highest burdens of chronic hepatitis and mortality due to liver failure and hepato-cellular carcinomas. However, national level estimates of the prevalence and risk factors for hepatitis B and hepatitis C are currently not available. A meta-analysis was performed to determine accurate national prevalence estimates, but a likely range of prevalence in different population sub-groups were estimated. A weighted average of hepatitis B antigen prevalence in pediatric populations was 2.4% (range 1.4-11.0%) and for hepatitis C antibody was 2.1% (range 0.4-5.4%). A

weighted average of hepatitis B antigen prevalence among healthy adults (blood donors and non-donors) was 2.4% (range 1.4-11.0%) and for hepatitis C antibody was 3.0% (range 0.3-31.9%). Rates in the high-risk subgroups were far higher. Data suggest a moderate to high prevalence of hepatitis B and hepatitis C in different areas of Pakistan. The published literature on the modes of transmission of hepatitis B and hepatitis C in Pakistan implicate contaminated needle use in medical care and drug abuse and unsafe blood and blood product transfusion as the major causal factors<sup>12</sup>.

As the disease can be transmitted even by trivial injuries and there is usually a major trauma in orthopedic injuries, there are more chances of transmission of disease from patient to medical staff and vice versa. This study had been conducted to evaluate the frequency of orthopedic patients suffering from these lethal diseases viz, HBV and HCV making this a major public health problem.

## METHODOLOGY

This was a prospective cohort study. The duration of the study was from July 2009 to December 2009. This study was conducted in Orthopedic Department of Sheikh Zayed Medical College /Hospital Rahim Yar Khan. Patients of either sex and of all ages who were undergoing orthopedic surgery were included in the study. All patients underwent screening for Hepatitis-B and Hepatitis-C and confirmed by Elisa method in positive patients. Data regarding age, sex, residence, HBV and HCV was collected and analyzed by SPSS version 14.

## RESULTS

Out of 745 patients 581 (77.98%) were male and 164 (22.02%) were female. Hepatitis B and C was present in 165 (22.15) patients. Out of these positive cases 125 (75.76%) were suffering from hepatitis C and 36 (21.81%) were suffering from hepatitis B. In 4 (2.43%) patients both hepatitis B and C infections were present. Among the 125 patients suffering from HCV, 101 (80.81%) were male and 25 (19.19%) were female. The male to female ratio was about 4 to 1. Out of 36 hepatitis B patients 29 (80.56%) were male and 7 (19.44%) were female patients. The male to female ratio was about 4:1.

Statistically there is significant difference between male and female regarding contracting hepatitis B & C infection.

Distribution of HBV, HCV Positive cases.

Among the patients who were suffering from both HBV & HCV were all male and none of female patients were inflicted from both HBV & HCV. There was no case of HBV positive in patients above 51 years of age. While HCV was present in each age group of more than 11 years and it was more frequent in males. HBV & HCV both were more frequent (75% of cases) in patients of lower than 30 years of age.

The prevalence of HBV & HCV in our study was 22.14%. The prevalence of HCV was 16.78%. The prevalence of HBV was 4.83%. The prevalence of both HBV & HCV was 0.53%. Among the predisposing factors previous history of surgery was positive in 39 patients; history of blood transfusion in 27 patients, dental procedure was in 17 patients' and 123 patients having injection therapy in the past.

## DISCUSSION

Hepatitis B and C are rapidly spreading in most parts of the world. Pakistan carries one of the world's highest burdens of chronic hepatitis and mortality due to liver failure and hepatocellular carcinomas. However, national level estimates of the prevalence and risk factors for hepatitis B and hepatitis C are currently not available.

In a review of the medical and public health literature over a 13-year period (January 1994-September 2007) of Pakistan, to estimate the prevalence of active hepatitis B and chronic hepatitis C in Pakistan. Among healthy adults, the prevalence of hepatitis B antigen (blood donors and non-donors) was 2.4% (range 1.4-11.0%) and for hepatitis C antibody was 3.0% (range 0.3-31.9%)<sup>13</sup>.

Hepatitis C virus infection is endemic in certain parts of the world. Its prevalence is not equal in all parts of the world. The difference in prevalence varies from few cases (mere fraction) to heavy toll of disease (double

Distribution of HBV, HCV Positive cases						
Age	HBV Positive		HCV Positive		HBV & HCV Positive	
	Male	Female	Male	Female	Male	Female
>10	1	3	-	-	1	-
11-12	6	4	12	2	1	-
21-30	9	-	32	6	1	-
31-40	10	-	25	6	-	-
41-50	3	-	8	2	-	-
51-60	-	-	12	8	1	-
61-70	-	-	10	-	-	-
>71	-	7	2	-	-	-
Sub Total	29	7	101	24	4	-
Net Total	36		125		4	
Grand Total	36+125+4=165					

*Note; HBV & HCV were quite less frequent in patients under 10 years of age*

Age and sex wise distribution of cases			
Age in years	Male	Female	Total
1-10	72	32	104
11-20	124	32	156
21-30	159	19	178
31-40	87	28	115
41-50	58	10	68
51-60	43	24	67
61-70	32	17	49
71-80	6	2	8
	581	164	745

digit figures). It is 0.4% in general adult population of Fukuoka Japan to 2.4% in Turkey<sup>14</sup> and 14.4% in Southern Italy<sup>15</sup>. In our study the prevalence of HBV & HCV was 22.14%. The prevalence of HCV was 16.78%. It is quite high as compare to any other country. A similar study was conducted in Dow University of Health Sciences and Civil Hospital, Karachi. Here all patients

(1089 patients) were screened and 138 patients were positive for HCV<sup>16</sup>. In another study the anti-HCV antibodies were found in 11.66% patients<sup>17</sup>.

Some results of this research do not match with the existing results of different areas of Pakistan. In our study the prevalence of HBV was 4.83% and prevalence of

Age wise distribution of per month cases						
Age in yrs	July		August		September	
	Male	Female	Male	Female	Male	Female
1-10	8	4	17	7	9	5
11-12	24	6	28	6	13	3
21-30	23	6	42	2	30	3
31-40	8	5	21	6	13	1
41-50	6	2	15	-	11	3
51-60	6	4	5	6	4	3
61-70	8	3	6	7	1	1
71-80	1	-	-	1	2	0
Sub Total	84	30	134	37	83	19
Net Total	114		171		102	
Grand Total	114+171+102=387					

Age wise distribution of per month cases						
Age in yrs	October		November		December	
	Male	Female	Male	Female	Male	Female
1-10	14	9	10	5	14	2
11-12	27	7	12	7	20	3
21-30	19	6	22	-	23	2
31-40	17	7	9	5	19	4
41-50	12	1	8	2	6	2
51-60	14	5	7	2	7	4
61-70	5	1	8	2	4	1
71-80	2	-	-	-	1	1
Sub Total	110	36	76	23	94	19
Net Total	146		99		113	
Grand Total	146+99+113=358 358+387=745					

both HBV & HCV was 0.53%. The results of another study are quite different to our study results. The study was conducted for assessing the prevalence of HBV & HCV in Orthopedic at Abbottabad, out of 1630 patients hepatitis B and C was present in 84 (5.15%) patients<sup>18</sup>, with patients having hepatitis C as 3.12% and hepatitis B in 2.02% cases. The male and female percentage in hepatitis C was 2.74% and 4.24% respectively. The hepatitis B male and female percentage is 2.32% and 1.17% respectively. In our study the male to female ratio of HBV and HCV was about 4 to 1. The results are also supported by other studies with higher prevalence among the male compared to female<sup>19,20</sup>.

Data of our study suggest a moderate to high prevalence of hepatitis B and hepatitis C in this region of Pakistan. Among the modes of transmission of hepatitis B and hepatitis C, the contaminated needle use in medical care and drug abuse is the worst weapon being used at its extreme level. The second major cause is the compromising status of sterilization of surgical instruments being applied to the virgin patients. The third casual factors is not screening of all patients under going to surgery especially in the remote and peripheral areas. At the last but not the least important is use of unsafe blood and blood product transfusion. It is suggested that all the patients who needs surgery they should be properly screened for HBV and HCV. It is also necessary that separate operation theaters and instruments should be used for HBV and HCV positive cases.

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## PREVIOUS RELATED STUDIES

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**Intelligence is the wife,  
imagination is the mistress,  
memory is the servant.**

**Victor Hugo**