Short Report

Operating in a Yellow Nation; the frequency of hepatitis B and hepatitis C positive at a tertiary care teaching hospital

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Abstract

Objects contaminated with blood and other body fluids of patients suffering from hepatitis B and C are an occupational health hazard to the health care personnel and a source of nosocomial spread. This descriptive cross sectional study estimated the frequency of hepatitis B surface antigen (HBsAg) and anti hepatitis C antibody (Anti HCV) positive patients among those undergoing a urological procedure in a tertiary care teaching hospital. A sample size of 550 patients was estimated using Stat Calc for Epi Info. A cluster off 558 patients were included. Ninety five (17%) were positive for serum HBsAg and/or anti HCV by Elisa. Gender/sex, admission year, urological diagnosis did not predict statistically significant relationship with the positive status. Past surgical history was marginally significant. In conclusion, all patients undergoing a urological procedure should be checked for anti HCV and HBsAg. A solid policy outlining the preventive practices is needed to stop this high burden of hepatitis turning into public health disaster.

Introduction

Pakistan which was previously thought to be a zone of intermediate endemicity for hepatitis B and C[1] carries one of the world's highest burdens of chronic hepatitis and mortality due to liver failure and hepatocellular carcinoma.[2] The prevalence of hepatitis B has been estimated to be 2.4% (range 1.4-11%) for hepatitis B surface antigen (HBsAg) and 3.0% (range 0.3-31.9%) for anti HCV antibody among healthy population[2] with wide variation with geographical areas and risk strata.[3] Jafri and colleagues concluded that unsafe injections, blood transfusions, unsafe surgery, dental treatment, injection drug abuse, unsafe sexual practices, skin piercing/tattooing, sharing razors and maintenance dialysis are significantly associated with hepatitis B and C.[3]

There is dearth of data regarding the frequency of patients suffering from hepatitis B and/or C among those undergoing urological operations in Pakistan. Urology services are unique and different from other surgical specialties in terms of exposure contact to patients' body fluids. It includes contact with urine and blood mixed with irrigation fluids during transurethral operations with high risk of splash injury which poses a significant risk to urologists.[4] Flexible cystoscopes and ureteroscopes may carry high microbial and viral burden requiring thorough cleansing and disinfection.[5] The direct mucosal contact of contaminated endoscopes may be responsible for spread of infection to other patients and a source of iatrogenic spread of viruses,[6] requiring more stringent protocols for their sterilization.

There are no uniform national or regional policies in Pakistan which would require mandatory screening of all patients for these viruses. Currently, most urologists screen patients for hepatitis B and C haphazardly based upon their risk factors. This necessitates the need for further specific studies to find out the specialty specific burden of the problem and if universal screening is needed instead of risk based approach. Such studies are of immense importance to formulate a viable policy for primary prevention of nosocomial transmission of disease and a major occupational

hazard in wards as well as operating rooms.

The present study estimated the frequency of HBsAg and /or Anti HCV antibody positive patients among those admitted for different urological procedures in a tertiary care teaching hospital in Lahore, Pakistan. It also investigated the potential association of different demographic and risk factors with positivity.

Patients, Methods and Results

This descriptive cross sectional study was carried out prospectively on a standardized protocol. All patients booked for a urological procedure underwent Anti HCV antibody and HBsAg by enzyme linked immunosorbent assay (Elisa). The demographic and related information was collected on a standardized data collection sheet prepared by the authors.

A sample size of 550 patients was estimated using Stat Calc for Epi Info (Version 6.0) by keeping the size of target population unknown, power of the study as 80 and 15% expected frequency of hepatitis positive patients and 50 % expected outcome of associated demographic and risk factors with 5% margin of error at 95% confidence interval. A cluster of 558 patients, who underwent different urological procedures from end of the year 2005 till start of the year 2009 consecutively, were included in this study. The data was entered into and analyzed by using SPSS Version 17 (SPSS Inc. Chicago, IL, USA). Multinomial regression was used to predict significant association of different factors with HBsAg and Anti HCV positive status. Chi-square test was used to estimate any significant differences between different categorical variables. A strict confidentiality of data was maintained at all steps.

Of total of 558 patients, four hundred and twelve (73.8%) were males and one hundred forty six (26.2%) were females. Mean age of the patients was 50.77 ± 20.42 years (range: 3-98 years). Only about seven percent of total were below the age of 18 years. Benign prostatic enlargement was the most common urological diagnosis (n=111, 19.9%) followed by urolithiasis (n=108, 19.4%), urethral stenosis (n=71, 12.7%), bladder cancer (n=55, 9.99%), prostatic carcinoma (n=38, 6.8%), vesicovaginal or ureterovaginal fistulae (n=19, 3.4%), pelvi-ureteric junction obstruction (n=16, 2.9%), end stage renal disease requiring AV fistula construction (n=8, 1.4%), renal cell carcinoma (n=4, 0.7%), and a wide range of conditions labeled as miscellaneous (n=127, 22.2%).

Of total, twenty patients (3.6%) were positive for HBsAg. Of these seventeen were males and three were females. Seventy five (13.4%) were positive for anti HCV antibody. Of these forty nine were males and twenty six were females. Overall, ninety five (17%) of the patients were infected with hepatitis B and/or hepatitis C. Table shows the statistical significance of the factors studied.

Table: Factors Associated with hepatitis positive patients.

Factor	HBsAg		Anti HCV Antibody	
	Cox & Snell	p-Value	Cox & Snell	p-Value
Sex	0.004	0.367	0.07	0.137
Urologic Diagnosis	0.030	0.522	0.030	0.512
Admission Year	0.022	0.132	0.011	0.602
Past Surgical History	0.05	0.12	0.53	0.055

The data above shows that almost every sixth person admitted for a urological procedure at a tertiary care teaching hospital was positive for HBsAg and/or Anti HCV antibody. Previously, no urology service specific data from Pakistan have been reported to compare with the findings of the present study. Khan and Colleagues conducted similar service specific study in Ayub Teaching hospital, Abbotabad NWFP and found that 5.15% of the patients undergoing orthopaedic surgeries were positive for HCV/HBV.[7] However, higher prevalence of hepatitis in Lahore[3] and difference in nature of two services would prevent any comparisons.

Of all risk factors described in different studies previously, only history of past surgeries was marginally significant among those analyzed in the present study. Further prospective studies are needed to find regression and correlation coefficient for these factors. The authors of the present study recommend serum Anti HCV and HBsAg tests for every patient admitted for a urological procedure.

In the absence of proper preventive practices, such a high frequency of hepatitis positive patients may turn into a public health disaster in terms of spread to other patients and occupational health hazard for health care personnel. There is dire need of institutional infection control and occupational health departments for quality assurance and further work in this regard. In the present scenario, occupational safety and health administration (OSHA) guidelines[8] and CDC guidelines for disinfection and sterilization in healthcare facilities, 2008[9] should be improvised to suit local needs. Khan et al suggested the provision of separate operation theatre facilities for infected patients.[7] However, this may not be very feasible considering the meager resources of the hospitals and not taking into account of extra measures needed in the wards and other patient care areas. Keeping all positive cases on a separate day list or towards the end of the list along with observation of the above said guidelines would be a more feasible option.

CDC guidelines for disinfection and sterilization in healthcare facilities, 2008 make use of the modified Spaulding classification of patient care items as critical, semi-critical and non critical items.[9] In urological context, for endoscopic equipment which is not autoclavable these

guidelines emphasize the stepwise execution of a series of steps. They suggest a range of chemical steriliants/disinfectants; of which >2% glutraldehyde solution is cost affective and easily available in Pakistan albeit with significant occupational side effects.

Every patient undergoing surgery should be checked for HCV and HBV infection. This is a potential source of nosocomial infection and an occupational health hazard for health care personnel. Further research is needed in different aspects of hepatitis B-C epidemiology and prevention to formulate a national hepatitis control policy. OSHA and CDC guidelines for sterilization and disinfection of healthcare facilities, 2008 after improvisation can be useful until the availability of national guidelines.

Conclusion

The frequency of anti HCV antibody and HBsAg positive patients in urological services is very high (17%) of the total population studied.

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