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PREOPERATIVE SCREENING FOR BLOOD-BORNE INFECTIONS – ESSENTIAL TOOL FOR PATIENTS AND HEALTHCARE

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ABSTRACT

INTRODUCTION: The aim of this study was to examine the magnitude of viral infections as a global health problem, affecting millions around the world. Universal preoperative blood-born HIV virus, HBV, HCV testing has been identified as a universal precautionary risk mitigation strategy. As a universal measure, safety kits are for the surgical team and post-exposure prophylaxis as further protection is mandatory. For patients prior to the onset of AIDS/liver cirrhosis/ hepatocellular carcinoma, early diagnosis of the disease and its treatment is often helpful. The purpose of this analysis was the measurement of HIV/HCV/HBV seroprevalence for successful control programmes.

PATIENTS AND METHODS: In collaboration with the Department of Pathology of the Indus Medical College Hospital, the research was carried out in the Department of Surgery and ALlied, Indus Medical College Tando Muhammad Khan. This analysis is a prospective study for the period from January 2019 to September 2019. Both patients admitted to elective/emergency surgery in the surgery department or those treated conservatively were included in the report. Visitors to The follow-up were removed.

RESULTS: A total of 305 patients admitted to the surgery department have been screened for HBV, HCB and HIV. Hepatitis C (HCV) was a common infection, followed by HBV, but there were also co-infections. The common age group affected was 21-50 years, with a male: female 3.28:1 ratio.

CONCLUSION: As part of routine pre-operative investigations, screening for HIV, HBV and HCV is mandatory in tertiary care centres in order to determine their prevalence and to prepare better preventive strategies.

KEYWORDS: Preoperative, hepatitis B, hepatitis C, human immunodeficiency virus, screening.

INTRODUCTION

Among those infections with Hepatitis B virus (HBV), Hepatitis C virus (HCV) and Human Immunodeficiency Virus (HIV), infections with different types of microorganisms such as bacteria,

viruses, fungi, and parasites are normal in the Pakistan scenario. A leading cause of morbidity has emerged. Co-infection leads to the fact that the hepatitis virus and HIV share common routes of transmission. [1-3] Personnel in health care that have blood exposure are at risk of HCV infection. In co-infection, the presence of one virus affects the other virus's natural history. Serology-surveys are one of the key methods of determining the prevalence of HBV, HCV virus that can be used. Around 130-150 individuals are chronically infected with liver cirrhosis and/or liver cancer and are at risk of developing it. More than 700,000 individuals suffer from liver diseases linked to hepatitis C. The high screening risk category is close to HBV. Hepatitis C does not always need treatment as the immune response will clear the infection in some individuals, and liver damage will not occur in some carriers of chronic infection. Hepatitis C treatment to date has been focused on 48 weeks of interferon and ribavirin injection therapy (expensive and risky). New DAA (direct antiviral agents) drugs have recently become much more effective, safer, shorter (12 weeks) and with a high cure rate. There is no HCV vaccine, but avoidance is compulsory. [4-5] AIDS, the acquired condition of immune deficiency, is a lethal disease caused by a retrovirus known as the human immunodeficiency virus (HIV) that makes the body of the person prone to life-long life-threatening opportunistic infections. In 2015, 2.1 million people were reported to be infected with HIV, with a reported 86,300 new HIV infections. The HIV prevalence was 0.26% (0.30% in men and 0.22% in women) in adults (15-49years). AIDS-related deaths have begun to show decreasing patterns with the country's rapid expansion of access to ART. Out of 2.1 million estimated cases in 2015, 1.4 million were diagnosed with HIV and 747,175 of these were treated with ART. [6] Post-exposure prophylaxis (PEP) for HIV consists of a comprehensive range of resources to prevent the development of infection in an exposed person, including: first aid care; therapy and risk evaluation; HIV testing and therapy; and the provision of antiretroviral medications, help and follow-up in the short term (28 days), depending on the risk assessment. [7] The purpose of this analysis was the measurement of HIV/ HCV/ HBV seroprevalence for successful control programmes.

PATIENTS AND METHODS

In the Department of Surgery, Indus Medical College Hospital Tando Muhammad Khan, this study was carried out. Both patients admitted for emergency and elective surgery and for conservative care are included in this report. This is a prospective form of research performed from January 2019 to September 2019 over a period of 9 months. As part of routine pre-operative investigations, screening for HIV, HBV and HCV is mandatory in tertiary care centres in order to determine their prevalence and to prepare better preventive strategies:

- To avoid transmission to the surgical community.
- Universal precaution by the use of improved personal protective devices (PPE).
- Prophylaxis Post-Exposure (PEP).
- Medical therapy and further treatment of diseases.

The serum has been obtained and tested for serological tests using the normal prescribed protocol. HBsAg, Anti-HCV and HIV were measured using CLIA technology. Instead of vaccination/ interferons, ribavirin therapy, the, patients with sero-positivity for HBV and HCV are referred to physicians for therapy and further management. Using SPSS software for statistical analysis using descriptive statistics, results were obtained.

RESULTS

Tables 1 and 2 indicate that of 305 patients, 30 (9.83%) were seropositive for HBV, HCV and HIV in total. In 12 cases (3.93%) in which 09 were males and 03 were females, the hepatitis B surface antigen was tested positive. In 15 (4.91%) of which 11 were males and 04 were females, the Hepatitis C virus was positive. In 3 cases of co-infection were males. Majority of seropositive patients belonged to age group of >50 years. Hepatitis C (HCV) 15/30(50%) was the most prevalent infection, followed by HBV 12/30 (40%).

Table 1: Distribution of Infection in Pre-Operative Screening of Surgical Patients (n=305)

Infections	Males (n=156)	Females(n=49)	Total (n=105)	Percentage (%)
HBV	09	03	12	3.93
HCV	11	04	15	4.91
HIV	00	00	00	00
HBV + HCV	03	00	03	0.98
Total	23	07	30	0.83

Table 2: Pre-Operative Screening in Age Wise Groups (n=305)

Age Group (years)	HBV	HCV	HIV	HBV+HCV	Total	Percentage (%)	p-value
<20	02	02	00	00	04	13.33	<0.001
21-50	02	03	00	00	05	16.66	
>50	08	10	00	03	21	70	

DISCUSSION

Pakistan has a 1-3% comparable prevalence of Hepatitis B, according to the World Health Organization (WHO). Hepatitis C seroprevalence has variable distribution in various regions of Pakistan with approximate of 3%. [8] In our sample, HCV is 4.91% seroprevalent. In Pakistan, 12 million people are suffering from hepatitis infection. Analysis of our findings showed that the most important variables for HIV/HBV/HCV prevalence rates were age and sex (Tables 1 and 2). Male age groups of 21-5 years: female 2.3:1 ratio had higher prevalence due to higher sexual activity, exposure to the environment, and behavioural factors. [9]

Since admission to follow-up, universal HBV, HCV, and HIV screening with positive patients and the surgical team needs expected management strategies. In terms of illness, treatment, prevention, cost improvement and impaired result, patients and their families should be adequately advised. Patients should be adequately treated with ART (HIV), INTERFERON / DAA (HCV), and HBV vaccines if no emergency exists. The surgical team can use personal protective equipment (PPE) in emergency situations. If someone inadvertently gets exposure by needle stick injury or sharp object (NSI) hacking, exposure to blood/body fluid (BBF), unfixed tissue and organs, recapping needles should not be overlooked and carefully handled as follows: Wash the wound with water immediately and do not use scrub or antiseptics, thoroughly wash after splash of blood / body fluid, and irrigate the eye with water or regular saline. Hepatitis B Immunoglobulins (HBIG) - HBIG should be administered as soon as possible (ideally within 6 hours and not longer than 48 hours) after an unintentional inoculation. At the same time, for HBsAg examination, the blood of the victim is drawn. If the test is negative, the vaccine should be started immediately and the full course (1 ml of adult formula 0, 1 month and 6 months) should be given. If the surface antibody test is positive, no further action is taken. Administer a booster dose of the hepatitis B vaccine to a previously vaccinated user. If there is exposure to HCV, there is no vaccine or PEP, so treatment must be administered on the basis of Interferon / Ribavirin / and DAA (direct antiviral agents) if the victim has a clinical disease. The rate of HIV seroconversion for percutaneous exposure after an AEB (accidental exposure to blood) is 0.3%. High-risk cases are screened for HIV according to the following schedule for seroconversion monitoring:

1. Base-line HIV test-at exposure period.
2. Repeat checking for HIV six weeks after exposure

• At 12 weeks,
• 6 months after exposure,

The patient's partner should also be tested for HIV, HBV and HCV. Positive cases should be forwarded for further management and ART to the NACO/ Helps therapy centre. [10-11]

CONCLUSION

HBV infections, followed by HCV, co-infections and HIV, were more prevalent. In both sexes, the most affected age group was >50years old. HBV is preventable by vaccination and should be

implemented in compliance with the compulsory immunisation programme. The awareness campaign could be a preventive measure to vaccinate family members of seropositive patients. Both health care workers should be vaccinated against HBV. No vaccine is yet available for HCV and HIV, so only preventive measures are needed. Active government, educational, and media initiatives on safe sex, blood and blood products from a registered blood bank, the use of disposable consumables in medical care, and proper management of bio-medical waste should be pursued for population awareness. For HIV, early diagnosis, ART therapy, counselling, spouse screening can be helpful in preventing the progression of the disease to AIDS, apart from preventive steps. For physicians, anaesthetists, interns, nursing personnel and other workers in the health care system, post-exposure prophylaxis as suggested would be preventive.

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