http://www.pjbs.org

PJBS

ISSN 1028-8880

Pakistan Journal of Biological Sciences

ANSInet
Asian Network for Scientific Information
308 Lasani Town, Sargodha Road, Faisalabad - Pakistan

Pakistan Journal of Biological Sciences 11 (2): 298-301, 2008
ISSN 1028-8880

Prevalence of Human Immunodeficiency Virus and Hepatitis B Virus in Preoperative Patients: Potential Risk of Transmission to Health Professionals

[1]C.E. Okpalugo and [2]O.O. Oguntibeju
[1]School of Medical Laboratory Sciences,
Lagos University Teaching Hospital (LUTH), Idi-Araba, Lagos, Nigeria
[2]School of Medicine, Spartan Health Sciences University, Vieux Fort, St. Lucia, West Indies

Abstract: The aim of present study was to determine the prevalence of Human Immunodeficiency Virus (HIV) and Hepatitis B Virus (HBV) infections in preoperative patients admitted for surgical procedures at the Lagos University Teaching Hospital (LUTH), Lagos, Nigeria. Two hundred patients (200 samples tested for HIV) and (100 samples tested for HBV) comprising 90 males (45%) and 110 females (55%) were recruited into the study. Sixty-eight of the 200 patients (34%) were scheduled for emergency surgery (group A) and 132 (66%) listed for elective surgery (group B). Seven (3.5%) of the 200 patients tested positive for HIV-1 and 2 using the Well-coenzyme method. Five (2.5%) and 2 (1%) of the 200 patients confirmed HIV-positive were females and males respectively. Sixty-one percent of the 100 patients tested for hepatitis B surface antigen were males and 39 (39%) females. Eighteen percent of the 100 patients examined were positive for (HbsAg). Ten percent of the 18 HBsAg-positive patients were males and 8 (8%) were females. This study showed the prevalence rate of HIV and Hepatitis B in preoperative patients at the Lagos University Teaching Hospital and to some reflects the prevalence of HIV and HBV in the general population.

Key words: Positive, human immunodeficiency virus, hepatitis B virus and surgery

INTRODUCTION

Both HIV and Hepatitis B Virus infections are endemic in Nigeria and are important causes of morbidity and mortality (Mustapha and Jibrin, 2004). Coinfection with HIV and HBV is a rapidly growing public health concern (WHO, 2003). The sub-Saharan Africa has been most severely affected by the HIV/AIDS pandemic with almost 9% of its adult population living with HIV (WHO, 2003). The HIV epidemic in Nigeria has extended beyond the commonly classified high-risk groups and is now common in the general population with the adult prevalence rate at 5.8% in 2001 as reported by Federal Ministry of Health, Nigeria (Anonymous, 2003). The report also indicated that some parts of the country were worse affected than others but no state is unaffected. All the states of Nigeria have general population epidemics of over 1% with some areas having prevalence higher than 10%. Furthermore, the infection cuts across both sexes and all age groups but youths between the ages 20-29 years are more infected. Nigeria is classified among the group of countries highly endemic for HBV infection. About 75% of the Nigerian population is reportedly likely to have been exposed to HBV at one time or the other in their life Sirisena *et al*. (2002).

Information is very scarce on the prevalence of HIV and HBV in pre-operative patients in Nigeria. It should be noted that testing for HIV and HBV infections is useful for epidemiological monitoring and for public health planning. As a result of this dearth of information, guidelines and other adequate information on the preventive and control measures are essentially lacking in many settings in Nigeria. The objective of the study therefore was to determine the prevalence of HIV and HBV in pre-operative patients for epidemiological purpose and to prevent possible transmission of these viruses to health workers.

MATERIALS AND METHODS

Study population: The subjects were patients admitted for surgery in the different surgical wards of Lagos University Teaching Hospital (LUTH), Nigeria. The patients were randomly selected and included males, females and children of various ages. Verbal consent was obtained from each patient and from the parents of under-aged patients before participating in the study.

Study design: Vene-puncture was carried out on all the patients from the ante-cubital vein with minimal stasis and

Corresponding Author: Dr. O.O. Oguntibeju, School of Medicine, Spartan Health Sciences University, Vieux Fort, St. Lucia, West Indies Tel: +1 758 454 6128

10 mL of blood was withdrawn. This was placed in plain sample tubes and allowed to clot. Each tube of blood was accompanied by a requisition that included the patients' given identity number (specifically for the study). A survey form was designed that included patient demographic data and risk factor information. All surgical staff and nurses were taught on how to ask questions referable to risk factor and how to complete the forms. The research team ensured that each patients' admission packet contained a survey form and preaddressed envelop marked confidential. Information was obtained at time of the admission examination. Completed forms were collected daily and matched with blood samples. The sera were separated from cells and stored frozen at -20°C and tested within 72 h.

Method of testing: Two samples were tested by an Enzyme-Linked Immuno-Sorbent Assay (ELISA) technique, using Well-cozyme HIV-1 and 2 kits (Well-Cozyme Diagnostics, Dartford, England). HbsAg test was carried out on 100 samples using the slide method (HBV latex reagent, Abbott, USA) based on the ability of latex particles coated with HbsAg specific antibodies to agglutinate in the presence of Hepatitis B surface antigen. Positive samples with ELISA were confirmed with Western blot test.

RESULTS AND DISCUSSION

In this study, a total of 200 patients were examined. Sixty eight of the patients came in for emergency operations and 132 of the patients were admitted for elective procedures. The results of this study are presented in Table 1-4.

There are documented evidences of health workers becoming infected with HIV after contact from an infected patient (Wormser *et al*., 1988; Anonymous, 1988a). Surgeons and operating room personnel are among those most likely to come in contact with blood from patients (Hagan *et al*., 1988). To decrease the risk of infection, operating room personnel attempt to treat every patient as if they are infected with HIV. It could be argued, however, that knowing preoperatively which patient is infected with HIV could result in procedural and behavioural modifications that could further decrease the risk of infection being spread to a health care professional. Although some have recommended patient screening preoperatively (Leen *et al*., 1989), others are of the opinion that testing all patients for the presence of HIV infection is not appropriate (Hagan *et al*., 1988; Bokhout, 1988). To asses the potential risk of exposure of health personnel especially operating room personnel during emergent and elective surgical procedures, a prospective study was carried to primarily determine the prevalence of HIV and Hepatitis B infection in patients undergoing emergency and elective surgery at the Lagos University teaching Hospital.

The results obtained from this study showed a sero-prevalence of 3.5% HIV and 18% HBV infection.

Table 1: Sero-prevalence of Human Immunodeficiency Virus (HIV) in preoperative patients in relation to age

Groups	Age (years)	No. of patients	Percentage	No. and (%) positive with Western Blot
1	4-17	45	22.5	1 (0.5)
2	18-40	122	61.0	6 (3.0)
3	>45	33	16.5	0 (0.0)

Table 2: Sero-prevalence of Human Immunodeficiency Virus (HIV) in preoperative patients according to category of operations

Group of surgical operations	No. of patients	Percentage	No. and (%) positive with Western Blot
Group A			
Emergency surgery	68	34	2 (1.0)
Group B			
Elective surgery	132	66	5 (2.5)

Table 3: Sero-prevalence of Hepatitis B virus in preoperative patients in relation to age

Groups	Age (years)	No. of patients	Percentage	No. and (%) positive with Western Blot
1	4-17	29	29.0	5 (5)
2	18-40	54	54.0	10 (10)
3	>45	17	17.0	3 (3)

Table 4: Sero-prevalence of HIV in relation to type of surgical procedures

Surgical procedures	No. of patients	No. of ELISA +ve	No. of Western Blot +ve
Exploratory laparotomy	7	1	1
Thyroidectomy	13	-	-
Heruiotomy	6	-	-
Appendicectomy	7	-	-
Urethroplasty	4	-	-
Myomectomy	13	2	1
Prostatectomy	3	-	-
Caesarian section	47	1	-
Gun shot injury	13	-	-
Mastectomy	8	1	-
Panniculitis	1	1	1
Ectopic pregnancy	20	1	-
Tuboplasty	1	1	1
Ovarian cyst	4	1	1
Cacx	3	-	-
Intestinal obstruction	10	-	-
Ca rectum	2	-	-
Compound fracture	1	-	-
Keloid	1	-	-
Duct papiloma	1	-	-
Ca stomach	1	-	-
Depressed skull	2	-	-
Ca head of pancreas	1	-	-
Acute renal failure	1	-	-
Cholecystectomy	1	-	-
Osteomyelitis	1	-	-
Retained placenta and Uterine rupture	2	-	-
Others	26	1	1

-: Negative, +: Positive

According to Diettrich *et al.* (1991), the indications and spectrum of HIV-associated with elective surgery reflect those seen in the general surgical practices and were similar to those seen in the general populace. Results of the current study showed a higher incidence in the patients listed for elective surgery (2.5%) and thus suggests that the sero-prevalence of HIV infection could be on the increase in the general population, as reflected in the WHO report. This could also imply that health care workers may be encountering more of these apparently healthy individuals harbouring the HIV, thus, exposing them to the potential risks of acquiring HIV and HBV infections. The HBsAg sero-positivity of 18% among preoperative patients confirmed that, Lagos, Nigeria is endemic for HBV infection. Present results were in conformity with earlier reports from community and hospital-based studies in some parts of Nigeria, which showed high prevalence of HBsAg ranging from 7.4-26% Ekpo *et al.* (1995).

At least 18 health workers, without risk factors, have been reported to contact HIV infection after a known exposure to an infected patient in a hospital setting (Anonymous, 1988b). The total number of health workers who have become infected is unknown but is certainly higher than the figure reported in our study. Elsewhere, of those health workers reported to have occupationally acquired HIV infection, most have a history of needle-stick exposure (Wallace, 1988). There are instances, however, in which the infection has apparently taken place after only skin contact with blood (Anonymous, 1988b). These reports are of particular concern to surgeons and health workers in the operating room setting. Even though gowns and rubber gloves impervious to blood are worn routinely, this by no means protects the operating room personnel from contact with blood. Studies have demonstrated that as many as 34.5% of gloves contain holes (Dodds *et al.*, 1988; Fell *et al.*, 1988), making skin contact with blood during every operative procedure almost certain for one of the health workers involved in the surgical procedures. In addition, inadverted punctures of the gowns and gloves and even the skin with needles, wires, scalpels and other sharp instruments used routinely in the course of surgery, occurs during virtually every operative procedure. Thus even though universal precautions are practiced in every operating room, defects in equipment and breaks in routine occur so frequently, even with the greatest of care taken, that health workers are exposed to the potential risk of HIV and Hepatitis infection during operating procedures that are performed on infected patients. In Nigeria, there is no documented report of operating room personnel that has been infected with HIV and Hepatitis but the fact that these personnel are daily being exposed to HIV-infected patients is a great concern of the potential risk of infection.

CONCLUSION

On the basis of the results of this study, it is concluded that the prevalence of HIV in preoperative patients is low. Also, the patients who are HIV positive can be identified by simple questions that should be routinely asked on admission. There will however, a small group of patients who are HIV positive, who may not be identified by admission history and thus remain a risk for health workers, particularly in the operating room setting. It is therefore, important for general precautions to be strictly adhered to in the hospital and particularly in the operating room setting. Further study with larger population size is recommended. This study however, provides important information on the sero-prevalence of HIV and HBV in preoperative patients at the hospital. This finding agrees with the report of World Health Organization that the incidence of HIV and HBV is on the increase in the general population in the country and needs to be urgently addressed.

REFERENCES

Anonymous, 1988a. Surveillance of health care workers exposed to blood from patients infected with the human immunodeficiency virus. N. Eng. J. Med., 319: 1118-1123.

Anonymous, 1988b. Mortality and Morbidity. Weekly Report, 37: 1-4.

Anonymous, 2003. National HIV/AIDS and Reproductive Health Survey. Federal Ministry of Health Nigeria, Abuja, pp: 209.

Bokhout, M., 1988. AIDS in the OR: A surgeon's view. Cand. Med. Assoc. J., 138: 402-403.

Diettrich, N.C., J.C. Calioppo, C. Kaplan and S.M. Cohen, 1991. A growing spectrum of surgical diseases in patients with HIV/AIDS. Arch. Surg., 126: 860-865.

Dodds, R.D.A., P.J. Guy and A.M. Peacock, 1988. Surgical glove perforation. Br. J. Surg., 75: 966-968.

Ekpo, M., H. Sasegbon and F. Oyewole, 1995. HIV and HBV serostatus of non-intravenous drug users in Lagos, Nigeria. Nig. Med. J., 29: 35-36.

Fell, M., W. Hooper and J. Williams, 1988. Surgical glove failure rate. Ann. R Coll. Sur. Eng., 71: 7-10.

Hagan, M.D., K.B. Meyer and S.G. Pauker, 1988. Routine preoperative screening for HIV. JAMA., 259: 1357-1359.

Leen, C.L.S., R.P. Brettle and A.G. Bird, 1989. Benefits of HIV antibody testing in symptom-free groups. Lancet, 2: 512-513.

Mustapha, S.K. and Y.B. Jibrin, 2004. The prevalence of hepatitis B surface antigen in patients with human immunodeficiency virus infection in Gambia, Nigeria. Ann. Afr. Med., 3: 10-12.

Sirisena, N.D., M.O. Njoku, J.A. Idoko, E. Isamade, C. Barau, D. Jelpe, A. Zamani and S. Otowo, 2002. Carriage rate of hepatitis B surface antigen (HbsAg) in an urban community in Jos, Plateau, Nigeria. Nig. Postgrad. Med. J., 9: 7-10.

Wallace, M.R. and W.O. Harrison, 1988. HIV seroconversion with progressive disease in health care worker after needlestick injury. Lancet, 1: 1454.

WHO, 2003. Global Health-sector Strategy for HIV/AIDS 2003-2997. WHO, Geneva, pp: 32.

Wormser, G.P., C.S. Rabkin and C. Joline, 1988. Frequency of nosocomial transmission of HIV infection among health care workers. N. Eng. J. Med., 319: 307-308.