

HIV Seroprevalence in Patients Undergoing Ophthalmic Surgery in the Niger/Delta Region of Nigeria

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SUMMARY

Aim: *The aim of this study was to determine the number of HIV positive cases undergoing ophthalmic surgery at two centres in Nigeria and to assess if routine testing is clinically or economically effective.*

Methods: *All patients listed for ophthalmic surgery in two eye units in southern Nigeria during a six-month period in 2005, who underwent a routine set of pre-operative blood tests – including HIV test – after giving full-informed consent, were included. Laboratory investigation of HIV status was by ELISA. Details of the patients' age, sex, diagnosis and preoperative HIV status were noted on a spreadsheet database.*

Results: *At the university teaching hospital, HIV was detected in one out of 87 cases (1.15%). At the other provincial hospital 3 HIV positive cases were detected out of 41 ophthalmic surgery patients (7.31%).*

Conclusion: *The prevalence of HIV in Nigeria is high, although it varies between type of hospital and region. Ophthalmic surgeons should bear this in mind whilst operating. Routine testing of HIV status might not be absolutely necessary as it does not influence changes in surgical technique or preparation but rather reinforces the need for safe and effective preventive measures.*

Key words: human immunodeficiency virus (HIV), seroprevalence, ophthalmic surgery, sub-Saharan Africa

INTRODUCTION

HIV infection rates in sub-Saharan Africa are particularly high.¹ In Nigeria the prevalence of HIV in adults has a mean average of 3.9% (2.3% - 5.6%) in a population of 140 million people.¹ General surgeons are considered to be at occupational risk of transmission of the virus from patients. Strategies for reducing the risk of peri-operative HIV transmission include infection-control precautions and

modifications of surgical technique. Where a patient is known to be HIV positive, steps taken to reduce the risk of peri-operative exposure include the use of disposable instruments, avoidance of blood spillage, double gloving and the use of waterproof gowns.

Mandatory pre-operative HIV testing is undertaken in many developing countries. In Nigeria, some surgical units follow general surgical guidelines by routinely checking the HIV status of all patients at the time of pre-operative assessment. The process is time-consuming and adds to the cost of the procedure.

AIM

This study was carried out to determine the prevalence of HIV positive cases amongst patients undergoing ophthalmic surgery in two eye centres in Nigeria and to assess if routine testing is clinically or economically effective.

The general aim of the study is to examine the rate of HIV positive ophthalmic patients against a background of high HIV prevalence in the population and thus consider the arguments for risk-stratified screening for HIV and the methods of reducing transmission of infection to surgeons.

METHODS

All patients listed for elective ophthalmic surgery in two eye units in southern Nigeria during a six-month period in 2005 were included in the study. Each patient underwent a routine set of pre-operative blood tests – including HIV testing – after giving full informed consent. Laboratory investigation of HIV status was done by Enzyme Linked Immunosorbent Assay (ELISA). Where a positive result was noted two further confirmatory tests were carried out in accordance with WHO guidelines². Patients with indeterminate samples were retested nine weeks later. Details of the patients' age, sex, diagnosis and preoperative HIV status were entered into an anonymous spreadsheet database.

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RESULTS

At the University Teaching Hospital, Port Harcourt, HIV was detected in 1 out of 87 cases (1.1% confidence interval 0.03% to 6.2%). At the provincial Okolobiri General Hospital, HIV was detected in 3 out of 41 ophthalmic surgery patients (7.3%, confidence interval 1.5% to 19.9%). Total HIV prevalence in the study was 4/128 (3.0%) See tables 1 and 2.

Table 1. Distribution of patients by ophthalmic diagnosis and location

	University Teaching Hospital	
	Negative	Positive
Cataract	50	1
Corneal	10	0
Lid surgery	6	0
Trauma	11	0
Unknown	5	0
Others	4	0
	Provincial General Hospital	
	Negative	Positive
Cataract	38	3

University Teaching Hospital
HIV prevalence 1.1%
Age: mean=47.0, standard deviation 24.5
Sex: male 40 (46%) female 47 (54%)

Provincial General Hospital
HIV prevalence 7.31%
Age: mean=48.6, standard deviation=19.9
Sex: male 21(54%) female 18(46%)

Table 2. Prevalence, age and sex distribution of HIV/AIDS amongst patients undergoing ophthalmic surgery in Nigeria

	UPTH	OKOLOBIRI
HIV prevalence(%)*	1.1	7.3
Age – mean (SD)	47.0 (24.5)	48.6 (19.9)
Sex n (%)		
Male	40 (46)	21 (54)
Female	47 (54)	18 (46)

* Fisher exact test = p = 0.1

DISCUSSION

HIV infection rates in sub-Saharan Africa are particularly high although large variations exist between individual countries.

Prevalence varies from 1% in countries like Somalia and Senegal to 15-20% in South Africa and Zambia. In four southern African countries, the national adult HIV prevalence rate has risen higher than was thought possible and now exceeds 20%. These countries are Botswana (24.1%), Lesotho (23.2%), Swaziland (33.4%) and Zimbabwe (20.1%).¹

Nigeria is the most populous country in sub-Saharan Africa with a population of 140 million people. Until recently the national prevalence rate of HIV has remained relatively low but it has grown slowly from below 2% in 1993 to 3.9% in 2005. However, HIV infection rates in some states in Nigeria are as high as that of Cameroon (5.4%).¹In total, around 2.9 million Nigerians are estimated to be living with HIV.¹

This rising rate of HIV infection puts surgeons in Nigeria at a higher risk of occupationally acquired infection. Some surgeons in Nigeria, including ophthalmic surgeons, routinely test all surgical patients for HIV, but the majority are not aware of the CDC guidelines on universal precautions for blood-borne pathogens; up to 75% work in centres with no policies on parenteral exposure to blood and body fluids.³ Adequate protocols and facilities for prophylaxis for exposed health care workers are lacking and still need to be established, even for general surgeons.⁴

HIV seroprevalence rates in the study vary significantly between the two centers (table 2).The explanation lies in the demographic profile of patients, particularly age and financial capacity. Statistically, however, both rates fall within the confidence intervals of the official HIV prevalence in Nigeria.

The routine screening for HIV in pre-operative patients has gained popularity in various countries and hospital settings, including countries where HIV prevalence is not particularly high.⁵ Arguments in favour are that voluntary testing alerts the surgeon to higher risk patients and enables the incorporation of precautionary measures to minimize occupational risk of exposure.⁶

Risk of exposure and transmission varies according to procedure. The risk is highest with long procedures, and when blood loss is common, particularly in vascular, intra-abdominal and gynaecological surgery.

Ophthalmic surgery is different from other surgical specialties in that exposure to blood is very limited in most procedures. One can therefore argue that routine HIV testing in *all* ophthalmic patients is expensive and unnecessary.

The International Centre for Eye Health (ICEH) states that during clinic procedures the risk of getting HIV from seropositive patients is probably very low. Unless the eye care worker has open wounds or dermatological lesions on his or her hands, no gloves need to be worn when examining HIV-seropositive patients.⁷

HIV has been isolated from ocular tissues but in small amounts, so that no special precautions need be taken when performing ophthalmic surgery, including cataract, on HIV-seropositive patients. Going by the study results, this would mean that at least 81% of procedures could have been performed without prior HIV screening.

Operating gloves should always be worn, but the use of double gloving, although recommended as a precaution against puncture injuries in general surgery, is of uncertain value in most ophthalmic procedures. It might be sensible to take this precaution when performing procedures which involve more exposure to blood, cutting (e.g., exenteration) or drilling bony fragments (e.g., dacryocystorhinostomy).⁷

Corneal transplantation is a possible route of viral transmission, especially for viruses that infect the central nervous system. For this reason potential donors are discarded if the cause of death is as a result of viral infection or an unknown disease of the central nervous system.

The problem in a developing country like Nigeria is that eye bank facilities are nonexistent and donor corneas are often used within hours after enucleation, not allowing enough time for routine testing of the donor serum. Rapid serological ELISA tests could rule out HIV infection in the donor in such circumstances.

CONCLUSION

This study shows that although HIV prevalence may vary between type of hospital and region located, it remains high in Nigeria. A high prevalence of HIV-positive patients may be encountered in an operative setting. Ophthalmic surgeons should bear this in mind whilst operating. Although the

routine testing of HIV status may not be necessary since its outcome does not influence changes in patient preparation or the surgical technique but rather re-enforces the need for safe and effective standard precautions. Further studies are needed to evaluate the differences between different centres and the feasibility of selective HIV screening.

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