Letters to the Editor

Routine Preoperative Screening for Human Immunodeficiency Virus in a General Hospital, Saudi Arabia

To the Editor:

Although routine preoperative screening of patients for human immunodeficiency virus (HIV) antibodies occurs in many hospitals, the issue remains controversial, especially in low-risk populations.[1]

A 1-year trial of routine preoperative screening for HIV antibodies was started in October 1991 at King Khalid National Guard Hospital (KKNGH), a 350-bed general hospital in Jeddah, Saudi Arabia. Simultaneously, a single-blind, prospective study was conducted to determine the benefits of the screening program, if any.

METHODS

The patient population seen at KKNGH is cosmopolitan: 65% Saudi, 35% expatriate. From October 1991, all patients who underwent surgery at KKNGH were tested routinely for HIV antibodies preoperatively, using Abbott (Chicago, IL) second- and third-generation enzyme immunoassay reagents, Abbott rapid enzyme immunoassay test pack, and Western Blot assay, where appropriate, according to manufacturer's instructions. Of the 6,739 patients who underwent surgery from October 1991 to October 1992, the records on 1,000 patients, randomly selected, were reviewed for information on demographics, medical and social history, physical findings, risk factors for HIV infection, duration of surgery, reported blood contact, and zidovudine (AZT) use. Blood contact was defined as a needlestick, a cut with a sharp object, or mucous membrane or skin contact. For HIV-positive patients, a note was made if their HIV-positive status was known previously or would have been predicted by clinical symptoms and signs. The surgeon's opinion as to whether screening for HIV was clinically indicated also was noted. Information was requested on breaks in Universal Precautions and blood contact for the period of the study. This information was compared with data gathered from the regular voluntary declaration system that has existed in the hospital since 1989.

RESULTS

The Table shows characteristics of the 1,000 studied surgical patients. Information was not available regarding sexual and social habits or prior blood contacts. Of the 6,739 surgical patients during the study year, 5 were found to be HIV-infected (rate, 0.74/1,000). Of these five, four would have been suspected to be HIV positive based on their medical history and clinically indicated tests. However, the HIV status was not previously known for any of the five positive patients.

The actual cost (1992 US dollars) for routine preoperative HIV screening was $101 per test, or $680,639 for the 6,739 surgical patients evaluated during the study year.

DISCUSSION

The complex ethical and practical issues surrounding the question of routine preoperative testing for HIV antibodies include (a) the degree of risk to the health workers, (b) whether the risk is reduced by prior knowledge of HIV status, (c) the utility of adopting Universal Precautions, (d) the liability risk to surgeons from a patient who is found to be seropositive or who develops acquired immunodeficiency syndrome after the operative procedure, (e) confidentiality, counseling, and the impact of false-positive results. These universal issues are complicated further by cultural and social factors unique to our part of the world, where details of social, sexual, and personal habits are very difficult to obtain or ascertain.

The seroprevalence of HIV in our patient population is very low (0.56/1,000 discharges; unpublished data). It generally is accepted that preoperative HIV testing should be performed on patients from groups at high risk for HIV infection.[2] However, defining high-risk groups is difficult in this community, especially in women, for cultural reasons.

Reducing the cost of HIV antibody testing is becoming an important issue for screening programs and laboratory managers.[3] One could argue against routine preoperative

TABLE
CHARACTERISTICS OF 1,000 EVALUATED SURGICAL PATIENTS

	%
Age	
0-14	15.5
15-44	59.0
45+	35.5
Reason for HIV testing	
Clinically indicated	11.2
Routine	88.8
Gender	
Male	61.0
Female	39.0
Type of surgery	
Emergency	4.3
Elective	95.7
General/urology	74.1
Pediatric	15.5
Orthopedic	10.4
Ethnicity	
Saudi	78.8
Other Arabs	15.8
Africans	3.3
Europeans	0.6
Indians	1.5
History of blood transfusion	
Yes	7.3
No	92.1
Not stated	0.6
Travel history	
Yes	20.0
No	33.2
Not stated	46.8

Abbreviation: HIV, human immunodeficiency virus.

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testing for children because of very low prevalence (<0.01/1,000 discharges; unpublished data). This would have led to a 15% saving. If HIV screening was performed for high-risk groups only, approximately a 90% savings would have been made. If routine preoperative HIV screening is to be argued against on a financial basis, it then becomes extremely important to attempt to identify high-risk groups by meticulous history taking and clinical examination.

In this study, $680,084 was spent to identify one HIV-positive patient whose status would not have been suspected based on medical history or clinically indicated tests.

There is a concern that routine screening for HIV might induce a false sense of security among surgeons, leading to a deviation from Universal Precautions.[4] Our study shows some evidence to support this impression. Published data suggest that surgeons experience intraoperative skin penetration once every 40 cases.[5] Thus, 125 such events would be expected annually at this hospital, but only eight were reported during the study period, clearly reflecting underreporting. Second, surgeons showed little interest in following up on the possibility of HIV seroconversion in patients with whom blood contact had occurred, reflecting a poor appreciation of the concept of false-negative HIV testing. However, limiting HIV testing to patients with clinical indications only did not improve adherence to adequate history taking, Universal Precautions, reporting of blood contacts, or follow-up of relevant HIV-negative patients for seroconversion.[4] Prior knowledge of the patient's HIV status would facilitate the early administration of AZT, which might be effective in preventing subsequent HIV seroconversion after a specific exposure, a valid argument in favor of routine preoperative screening.

In conclusion, because of very low seroprevalence of HIV infection in this community, it is recommended that our hospital's policy for HIV screening should be discontinued, and testing should be limited to high-risk patients only. This could be accomplished by using formatted surgical history sheets addressing risk factors for HIV infection that have to be completed thoroughly on all patients and enforced through regular checks by senior surgical staff and random review by quality improvement specialists.

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Barrier and Antiviral Effect of a New Cream Formulation

To the Editor:

The increased awareness of deadly infectious diseases has led many in the healthcare profession to question the integrity of their gloves. This is not unwarranted, because perforation rates remain higher than the Food and Drug Administration guidelines of 2.5% for unused sterile surgical gloves and 4.0% for unused examination gloves.[1-4] In response to this, Microbarriers, Inc (Pulaski, WI), developed a novel cream that exhibits barrier and antiviral properties. We investigated the ability of the base cream and base cream with 5% nonoxynol-9 to act as a barrier to herpes simplex virus type 1 (HSV-1) and the amino acid leucine.

To test the effect of the cream as a barrier, we simulated the condition of a barrier with a pair of stacked filter paper disks.[5] The bottom disk was dampened with distilled water. A uniform layer of the cream containing 5% nonoxynol-9 was applied to the top filter, and then 100 µl of a solution containing either radiolabeled leucine or HSV-1 was applied to the stack. The bottom filter was removed at time points 0, 5, 15, 30, 60, and 180 minutes, and the amount of label passing through the cream was counted in a scintillation counter. Control filters contained no cream. The results of these experiments are shown in Figure 1. Counts at all time points were significantly ($P<.05$) lower for the cream than for their respective controls (Student's t test). At saturation, 68% of the leucine and 27% of the HSV-1 had passed the barrier, compared to their respective controls. Similar results were obtained with the base cream without nonoxynol-9 (data not shown).

To test the antiviral activity of the cream, a dry Dacron swab was dipped into the cream and smeared on the bottom and sides of a 96-well microtiter plate. The cream was allowed to dry, and then a solution containing HSV-1 (100 µl) was added to each well. At time points 0, 5, 15, 30, 60, and 180 minutes, the solution was removed and assayed for live virus. No cream was added to control wells. The results are shown in Figure 2. The cream alone reduced titers by 15- to 20-fold, which do not differ significantly from the control. The addition of nonoxynol-9, however, had the effect of reducing viral titers to 0 after as little as 5 minutes' exposure; these differences were significant ($P<.05$).

The development of this new cream offers a possible second line of defense to the use of gloves and may provide some protection even when used alone. This new formulation has barrier properties similar to other creams,[5] but, with the addition of nonoxynol-9, also has significant antiviral properties that would enhance the protective effect. Additional studies of the effect of the creams on glove material and of clinical efficacy now are needed.

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