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Transurethral prostatectomy in human immunodeficiency virus-infected patients, morbidity and surgical risks in a developing economy

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Abstract

Human immunodeficiency virus (HIV) infection is increasing world-wide and highly active antiretroviral treatment (HAAT) is allowing afflicted individuals to live near normal life span and acquire surgical diseases of the aged as in the unaffected population. This pose occupational hazards to operating surgeons especially in tropical Africa where the seroprevalence is so high that seroconversion in the medical staff contaminated with the virus is estimated to be as much as 15 times (per annum) more than what obtains in developed. A 63-year old man was admitted to our Hospital with urethral catheter in situ and having failed medical therapy, he opted for transurethral prostatectomy (TURP) which was done without any post-operative complication. He was known to be afflicted with human immunodeficiency virus and on treatment for 3 years. He also had a large but reducible inguinoscrotal hernia for 4 years attributed to lower urinary tract obstruction. He had a Lichtenstein repair of right inguinoscrotal hernia which was complicated by small hematoma that was evacuated. The risk of transmission and surgical morbidity during transurethral prostatectomy could be minimized by adequate universal precaution, pre-testing of all consented patients and wise selection of patients that would benefit from such surgical therapy.

Keywords: Human immunodeficiency virus infected patients, morbidity, risk of transmission, transurethral prostatectomy

Résumé

Infection de virus de l'immunodéficience humaine (VIH) est croissant à l'échelle mondiale et un traitement antirétroviral hautement actif (HASM) permet aux personnes souffrantes de vivre près de durée de vie normale et acquérir des maladies chirurgicales des personnes âgées comme dans la population affectée. Cette risques professionnels de pose aux chirurgiens d'exploitation surtout en Afrique tropicale, où la séroprévalence est tellement élevée que séroconversion chez le personnel médical contaminé par le virus est estimée à 15 fois autant que (par an) de plus que ce qui obtient en développé. Un homme de 63 - an, a été admis à notre hôpital avec cathéter urétral in situ et n'ayant pas un traitement médical, il a opté pour une prostatectomie transurétrale (TURP) qui a été faite sans aucune complication post-opératoire. Il était connu pour être affligés avec le virus de l'immunodéficience humaine et le traitement de 3 ans. Il avait aussi une hernie inguinoscrotal grand mais réductible pendant 4 ans, attribuées à l'obstruction des voies urinaires inférieure. Il avait une réparation de Lichtenstein de hernie inguinoscrotal droite qui a été compliquée par petit hématome qui a été évacué. Le risque de transmission et de la morbidité chirurgicale au cours de la prostatectomie transurétrale puisse être minimisé par précaution universelle adéquate, le prétest de tous les patients consenties et sage sélection des patients qui bénéficieraient d'un tel traitement chirurgical.

Mots clés: HIV, la morbidité, risque de transmission, TURP

Introduction

The human immunodeficiency viral (HIV) infection is increasing worldwide and current medical therapies are allowing patients to live longer and acquire surgical diseases as in the general population.^[1] Whereas homosexual transmission predominates in developed countries, in Africa, heterosexual route is the leading cause of HIV infection. This has not excluded older people contacting the disease due to unprotected multiple sexual partners. The hospital prevalence of HIV infection in general surgical patients has been reported to be 0.3-24%.^[1] HIV-related pathology and incidental pathology accounts for 20-25% of elective and emergency surgeries.^[2]

In concert with improved drug management of HIV/AIDS, there has been a major decline in AIDS related surgical illnesses and surgical curriculum has been revised to take cognizance of the much reduced albeit important role of treating such immune-compromised but potentially infective patients.^[3] The use of highly active anti-retroviral treatment (HAAT) has led to these patients attaining normal or near normal life expectancy and therefore suffering similar aging diseases as uninfected population. Surgeons would therefore be faced with the surgical treatment of these diseases.^[4,5]

Transurethral prostatectomy (TURP) involves the use of large volumes ($\geq 20l$) of irrigation fluid for endoscopic visualization of operation field, the bloody effluent of which has the potential to splash onto mucous membrane of the eyes, nose and mouth and abraded skin surfaces. The irrigation catheters also have the potential to become blocked in the post-operative period, further exposing medical and nursing staff to potentially highly infective bloody fluids.

There is paucity of data on TURP on HIV-infected patients worldwide as HIV may be uncommon in areas where a large volume of this procedure is carried out and probably due to apprehension of transmission and hence avoiding TUR procedures in such patients.

We report a case of HIV-infected individual on HAAT who underwent TURP and review the literature on HIV and the surgeon and suggest modified universal precaution as regards transurethral surgery in afflicted patients.

Case Report

A 63-year old man was admitted to our Hospital with urethral catheter *in situ* and having failed medical therapy, he opted for TURP. He was known to be afflicted with human immunodeficiency virus and on treatment for 3 years. He also had a large

but reducible inguinoscrotal hernia for 4 years attributed to lower urinary tract obstruction. He was hypertensive on treatment but no history of diabetes mellitus. Clinical examination confirmed a left large reducible inguinoscrotal hernia and a large benign prostate on digital rectal examination. His CD₄ count was 434 cells/mm² but we could not do his viral load. He reported a prostate specific antigen of 4.8 ng/ml and no organism was grown on urine culture.

He underwent a TURP, resecting a 90g chip using cooled boiled water for irrigation and under subarachnoid spinal block and ceftriaxon antibiotic cover for 48 hours. There was no post-operative complication and the patient was discharged within 48 hours after removing the urethral catheter 24 hours post-operatively with no significant post-micturition residual volume.

He returned 6 weeks later to have a Lichtenstein repair of his hernia under spinal subarachnoid anesthetic block and antibiotic (Augmentin 1.2g iv daily for 2 days) cover. This operation was however complicated by a small scrotal hematoma which resolved spontaneously 2 months postoperatively. The patient was very satisfied with the two procedures at 6 months.

Discussion

In 2007, there were 33 million people living with HIV with a 3-million infection and 2-million death rates annually. It is the most destructive epidemic globally. Sub-Saharan Africa accounts for 67% global infection of HIV/AIDS with Nigeria being the third highest, closely behind South Africa and India. Nigeria, with a population of 148 million, has 46.6% of its population (69 million) in the risk age group of 15-49 years and it has a HIV infection prevalence of 4.5%.^[6,7]

The majority of patients undergoing major surgeries are not routinely screened for viral diseases in most Nigerian hospitals despite the high prevalence of viral hepatitis and HIV in the region. Concern on the transmission of HIV in the operating room has lessened in developed countries but it is still a major problem in sub-Saharan Africa with many surgeons becoming apprehensive once the viral status of a patient is known and some even deny such patients surgical treatment.

The occupational risk of blood born infections in healthcare setting depends mainly on 3 factors: the prevalence of infected patients, the probability of acquiring a specific infection following a single exposure, and the frequency of at risk exposures.^[8,9]

The risk of occupational exposure to HIV is well documented with the risk of transmission after hollow needle injury being 0.3% (0.2-0.5%) while

transmission via mucous membrane is 0.09% (0.006-0.5%, 95% CI). Other contributing risk factors are high viral loads and high inoculating blood volume such as needle traversing through a vein before percutaneous puncture.^[10-12]

The endoscopic surgeon is quite unaware, in nearly all instances, of facial contamination because the splashes are frequently both minute and dilute and not visible to the naked eye. In a sodium fluorescein study, Taylor showed that in 17 out of 20 cases (85%) there were facial contaminations on special photography despite being invisible to the naked eyes.^[13] Despite the low occupational exposure rate the HIV seroprevalence was so high in tropical Africa that the relative cumulated seroconversion risk for surgeons is estimated to be 15 times higher than in western countries.^[14]

The CD₄ count is a marker of the degree of immunosuppression with a count \leq 200 cells/mm² being a critical level at which opportunistic infections set in and surgical morbidity would be high. The CD₄ count and viral load, in addition to routine laboratory tests, allow for assessing prognosis of a surgical outcome and knowing that CD₄ cell forms 10% of the total lymphocyte count, it may be easier to assess the level of lymphocyte count as CD₄ would generally not be available within a 24-hour period to be relevant in a developing country setting. Also the post-operative viral load of 75,000 RNA copies/ml is associated with high morbidity and mortality rates.^[15]

The risk of infectious complications and transmission to medical staff in HIV-infected patients can be minimized by carefully assessing the patient and measuring the routine and HIV specific pre-operative variables. Surgery in such an asymptomatic HIV-positive patient could be made safer and more effective.

Conclusion

The risk of HIV exposure in TURP could be minimized by the use of continuous flow resectoscope with suction device attached, the use of a CCTV camera rather than looking through the telescope and the operating field should be lowered below the high stool seated surgeon to reduce fluid splash to the face. Face shield should be used to prevent eye mucous membranes splash. Hemostasis should be adequate to reduce the frequency of catheter blockages in the ward and barrier nursing instituted. Proper disposal of effluent for environmental safety should be organized. High risk patients presenting for transurethral surgery should first be screened for HepBV, HepCV, and HIV antigen as in majority of cases patients in this environment prefer to remain silent on their HIV status due to stigmatization by the society and are generally unaware of HepBV and HepCV positivity.

Antiretroviral drugs should be easily accessed by exposed medical staff through the Hospital Infection Control Unit.

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