

The Impact of HIV Infection on the Surgical Disease Burden in Africa

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The Human immunodeficiency virus (HIV) infection stands among the greatest health challenges facing Africa today. However, the impact of the pandemic on the surgical diseases burden in the continent has received scant attention in the world literature. This study had as general objective to determine through literature the impact of the HIV infection on surgical diseases in Africa and in our regions in particular. To achieve this task searched Google website in the first half of July 2008 to reference lists of literature on HIV and surgical diseases burden to add to our own humble experience. We also contacted and discussed with local experts in the field.

Data retrieved point out that HIV infection, throughout last two decades, has highly increased the number of African common surgical burdening diseases, mainly in Sub-African countries. The burden is on all categories of surgical diseases: injuries, congenital abnormalities, tumours, surgical inflammations and infections. However, while the management of the HIV and its opportunistic infections has met the attention of the international community and has continued attracting health care donors and partnerships, surgical practice has not been given any rank among disease control priorities of the United Nations Millennium Goals. It is suggested that that African surgeons, especially in sub-Saharan countries, should together join in efforts so that surgical diseases be considered as “Other Neglected Tropical Diseases (NTD)” listed among the UN health care problems and deserve the attention of the international committee

Introduction

Twenty five years only since its first recognition in early 1983, the Human immunodeficiency virus (HIV) infection has become the world number one pandemic, currently affecting more than 40 million peoples¹. It is estimated that 60-70% of the victims reside in Sub-Saharan Africa¹. The infection is then among the greatest health challenges facing Africa today. However, the impact of the pandemic on surgical diseases burden in the continent has received scant attention in the world literature². The main objective of this study was to determine through literature review the current situation of this impact in the continent and to propose the way forward in alleviating the burden. As specific objectives, the study is intending:

1. To establish through literature review, the impact of HIV infection on each of the well known groups of surgical diseases burden in Africa mainly in sub-Saharan Africa. congenital malformations, injuries, surgical inflammations and infections and tumours
2. to analyse the burden of that viral infection on the practice of surgery itself

Methods

To accomplish the task, we searched Google website in the first half of July 2008 to reference lists of literature on HIV and surgical diseases burden. We also read basic and textbooks³ on “infection prevention” as well as the professional guidelines on HIV infection from the Association of Surgeons of East, Central and Southern Africa, Central Board of Health⁴ and the Medical Council of Zambia⁵. At last we contacted and discussed with local experts in the field. We yielded from this exercise more than 25 references that allowed us making following comments, conclusions and recommendations.

Results and Discussion

The impact of HIV infection on the surgical diseases burden in Africa

The first evidence was that, despite recent improvement, very few clinical trials have been done on the

burden of HIV infection in Africa. A study was conducted by Siegfried, Clarke and Volmink⁶. They constructed and analysed a database of randomised trials on HIV infection, carried out wholly or partly in Africa, using as sources Central, Medline, Embase and LILACS. They only took in account articles reported and published between 1987 and 2004. They found only 77 randomised trials. The trials were conducted only in 18 countries of 48 sub-Saharan Africa (no one from North Africa). Only 19 had a principal investigator located in an African country!

The second evidence was that the burden was particularly enormous in sub-Saharan Africa and caused mainly by high rates of injuries, obstetric complications, cancers, birth defects, and perinatal conditions⁸.

HIV and Congenital malformations

Congenital defects are known as surgical diseases burden in Africa not only because of their frequency, but also because of the skills and logistics needed for their management in very limited facilities. Ozgediz and Riviello⁸ have estimated the disability adjusted life year (DALY) for congenital defects for Africa at two million DALYs. Up to 2002, while congenital rubella and syphilis were considered birth defects, congenital HIV was not yet. Bourne and Borman⁹, during an International Conference on AIDS, in July 2002, demonstrated that not only the congenital HIV was the most common birth defect globally and is particularly in Sub-Saharan Africa, but that it was the most amenable to cost effective prevention with current mother to child treatment regimes.

HIV and injuries

Injuries represent the largest portion of surgical disease burden in Africa followed by obstetric complications, malignancies, congenital anomalies and peri-natal conditions. Ozgediz and Riviello⁸ have estimated the DALYs (disability adjusted life year) of injuries at 63 million DALYs worldwide and at 10 million DALYs for Africa. In men aged 15 to 44 years, the predominant economically active segment of the population, only HIV takes more lives than road traffic crashes. For every death from a road crash, dozens are left with temporary or permanent disabilities^{8,10,11,12}. Most of these deaths result from road traffic injuries, wars, and interpersonal violence¹¹. According to the WHO¹³, road traffic injuries, war, and homicide, respectively, were the 10th, 11th, and 14th leading causes of mortality in Africa during the year 2000.

Moreover for many authors there are many relationships between injuries and HIV infection. The role of stress, stigma, depression, anxiety in leading directly to physical trauma has been emphasised^{14,15,16}. But HIV infection may indirectly put people in vulnerable groups predisposed to trauma as pointed out by Kelly at a seminar of SADC-EU¹⁷. For example increase of street kids exposed to road traffic accident and to violence

HIV and surgical inflammatory/infectious diseases

Bailey at the UTH, Lusaka, wrote that "the human immunodeficiency virus has resulted in a major change in the presentation and behaviour of certain common diseases in Africa". This review describes some of the important changes and discusses the implications for management. Among these syndromes are clinical spectrum and management of peritonitis and other intra-abdominal sepsis.

HIV infection overloads surgical staff in sub-Saharan Africa as mentioned by many reports on surgical infections/ inflammations: appendicitis in HIV –positive patients¹⁹; HIV and surgical anal conditions and sepsis^{20,21}; cardiovascular diseases: pericardial disease, arterial aneurism², surgical tuberculosis: pleural effusion, extra-pulmonary tuberculosis. Even in rural area, the burden of paediatric HIV disease in poses a substantial challenge for health resources²².

HIV, obstetric emergency and peri-natal conditions

Ozgediz and Riviello⁸ have estimated in Africa the DALY at 4 million DALYs for obstetric complications and at 2 million DALYs for perinatal conditions. Emergency obstetric complications as

referrals from rural districts cause more than 50% of maternal mortality^{23, 24} Newell²⁵ and Sinyinza²⁶ have reported high rates of child peri-natal mortality and morbidity in HIVpositive mothers. The reports from WHO Geneva 2002 and 2005 give all dimension of the problem^{27,28,29}. Fortunately obstetric complications and perinatal conditions have been taken in account in the Millennium Development Goals by the international Community. Since 2000, when the United Nations Millennium Declaration was signed, efforts to reduce mortality among children younger than five years of age have been accelerating.

HIV and cancer diseases

Ozgediz and Riviello⁸ have estimated the DALY for malignancies at 2 million DALYs in Africa. As for the HIV opportunistic viral, bacterial, parasitic and mycolitic infections, publications worldwide have shown high increase of cancer diseases related to HIV infection. In sub-Saharan Africa, reports from Uganda and Zimbabwe are quite explicite^{32,33}.

The impact of HIV infection on the burden of the practice of surgery itself

Not only, HIV infection has increased the burden of the surgical practice by increasing the related surgical diseases but the pandemic has overloaded the practice of surgery by introducing more and more surgical interventions of HIV infected patients bringing other challenges on how to prevent occupational transmission and how to improve the outcomes of HIV infected patients with surgical conditions.

In a very large retrospective study to audit the impact of HIV/AIDS in general surgical practice in the UK, Dua et al³⁴ concluded that surgery for HIV patients can be safely conducted for anorectal procedures, vast majority of surgery in HIV/AIDS patients. Medical treatment for patients with HIV/AIDS has developed dramatically over the last two decades. In parallel, this has resulted in a heavy, new and varied workload for general surgeons. In our own practice a study was taken on outcomes of HIV positive laparotomised patients of two big neighbouring departments in Austrian Africa³⁵. We noted a high rate of re-interventions, long periods of hospital stay and high occurrence of surgical site infection in HIV-positive patients in comparison with those HIV negative

.In summary, HIV /AIDS presents unusual and challenging acute surgical problems across all specialties. Surgeons play a vital synergistic role, working in conjunction with HIV physicians in the management of HIV positive patients³⁴. However this overload of surgical disease has not been taken in account by the international community and has not met the concern of the Millennium Development Goals priorities.

The way forward in promoting the practice of Surgery and alleviating the HIV surgical diseases burden in Africa

The first need is to quantify this burden by establishing the disease control priorities in our settings. Such initiative has been launched by the Fogarty International Center of the US national Institutes of Health, the WHO and the World bank in 2001 in a project called the Disease Control priorities project or DCP. It allows to identifying policy changes and interventions strategies for health problems of our Low-income and middle-income countries (LIMICs). After establishing these priorities the project focuses on the assessment of the cost-effectiveness of health-improving strategies (or interventions) for the conditions responsible for the greatest burden of disease, examining also crosscutting issues crucial to the delivery of quality health services, including the organisation, financial support, and capacity of health systems.

After such studies in Africa, (mainly in sub-Saharan Africa) two surgeons, Doruk Ozgediz (University of California San Francisco, USA) and Robert Riviello (Harvard University, Boston, are calling on the international health community to recognize that surgical conditions account for a huge burden of disease in the developing world, and that the human right to health must include access to essential surgical care⁸. The authors further remark that “while there has been an explosion of donor aid to support infectious disease control, there has been little donor support to improve basic, essential

surgical services, even though providing such services is an extremely cost-effective way to improve public health.”

What should be done in the Region?

Working under the Ptolemy Research Project, Massey Beveridge et al^{36,37} have identified and summarised the priorities as follow in order to reduce the burden of surgical disease in East Africa by 2010:: improve opportunities for continuing medical education (CME) for practicing surgeons; introduce more surgical skills workshops for medical students and clinical officers; involve COSECSA in surgical training as well as curriculum development and certification of surgeons; provide a feedback system by which medical students and surgical trainees may evaluate their teachers; recruit and train more nurses and anesthetists. provide free HIV counselling and post-exposure prophylaxis for health care workers with occupational exposure; improve surgical resources in local hospitals so they can perform basic surgery; provide or increase service and maintenance for current hospital equipment.; attract funding for surgical research into common diseases; develop protocols and treatment logarithms for common conditions.

Four types of activities may be undertaken by surgeons themselves/: efforts of getting funds by available means, research on the burden on the surgery, organisations of training programmes, outreach and continuous education to rural areas. Funds are needed to practice training programmes, outreach programmes and continuous educations as well as research. The research of funds shall be a permanent concern. International donors' community, partnerships, private and public funds. We shall join our colleagues Ozgediz and Riviello⁸ in considering the successful approaches of neglected tropical disease initiatives for surgical conditions , and proposing a variety of mechanisms that could stimulate efforts to improve delivery of surgical care in Africa, including donation programs and public-private partnerships

The training programmes based on surgical disease burden are available and their running must be more frequent. It has been shown that they may reduce the burden by 50% if sufficiently done⁸.

1. Injuries: Trauma management Course; Non-operative treatment of fractures, management of burns⁸.
2. Workshop on prevention of occupational transmission of HIV and other serious infection in operating theatre³⁸.
3. Formal services of diagnostic counselling testing and care in all surgical settings.

Outreach programmes and organisation of continuous education and recycling in rural area must be combined. The outreach programmes alleviate rural areas people's suffering. The education programme for rural staff will allow the effects last. All this shall contribute in saying like Ozgediz and Rivello that "Patients with untreated surgical conditions as well as the local clinicians struggling to care for them, must gain greater recognition by the global public health community. African surgeons shall join the adage " Surgery is cheap and effective but donors neglect it"

References

1. GRZ, Ministry of Health, National HIV/STI/TTB policy, Annual report 2004
2. Ntsekhe M, Hakim J, - Impact of Human Immunodeficiency Virus Infection on Cardiovascular Disease in Africa – Mail to Dr Mpiko Ntsekhe: mntsekhe@uctgsh1.uct.ac.za
3. Teitjen LD, Bossemeyer D, McIntosh N.- Infection Prevention Guidelines for healthcare Facilities with limited resources.- JHPIEGO Corporation 2003
4. The Central Board of Health.- Zambia Infection Prevention Guidelines. Edit 1 January 2003
5. The Medical Council of Zambia : Guidelines on the Ethical Problems surrounding

- HIV/Aids, April, 2005
6. Siegfried N¹, Clarke M¹ and Volmink J² -Randomised controlled trials in Africa of HIV and AIDS: descriptive study and spatial distribution Mail to N Siegfried nsiegfried@cochrane.co.uk
 7. Ionnidis J-P;A, Swinger G-H, Pienaar E, Volmink J, A Ioannidis J-P, - Relation between burden of disease and randomised evidence in sub-Saharan Africa: survey of research (Clinical Trials and Evidence Based Medicine Unit, Mail to J P A Ioannidis. jioannid@cc.uoi.gr)
 8. Ozgediz D, Riviello R- The “Other” Neglected Diseases in Global Public Health: Surgical Conditions in Sub-Saharan Africa. PLoS Med 5(6): e121 doi:10.1371/journal.pmed.0050121, Published: June 3, 2008
 9. Bourne DE, Borman B; International Conference on AIDS. - Congenital HIV - The world's leading birth defect. Int Conf AIDS. 2002 Jul 7-12; 14: abstract no. MoPeC3333.
 10. Odimba BFK; [Specific Aspects of Trauma in African developing countries. A twenty-Year surgical experience]; published in 2007, 6 (2): 44-56 (E-Mémoires of French National Academy of Surgery:)
 11. Bowman B, Seedat M, Duncan N and Kobusingye O,- Violence and Injuries The World Bank 2006
 12. Lagarde E (2007) Road traffic injury is an escalating burden in Africa and deserves proportionate research efforts. PLoS Med 4: e170. doi:10.1371/journal.pmed.0040170.
 13. WHO (World Health Organization). 2002. *World Report on Violence and Health*. Geneva: WHO.
 14. Leserman, J., Wells Pence, B., Kathryn Whetten, et al.-Relation of Lifetime Trauma and Depressive Symptoms to Mortality in HIV- Am J Psychiatry 164:1707-1713, November 2007, doi: 10.1176/appi.ajp.2007.06111775 © 2007 American Psychiatric Association
 15. Hartzell, J.D., Janke, I.E and Weintrob A. C.-Impact of depression on HIV outcomes in the HAART era, J. Antimicrob. Chemother., August 1, 2008; 62(2): 246 - 255. [[Abstract](#)] [[Full Text](#)] [[PDF](#)]
 16. Leserman, J. -Role of Depression, Stress, and Trauma in HIV **Disease** Progression, Psychosom Med, June 1, 2008; 70(5): 539 - 545.
 17. Kelly M-J- 1/The Impact of HIV/AIDS on the Rights of the Child to Education. Paper Presented at SADC-EU Seminar on The Rights of the Child in a World with HIV and AIDS Harare, 23rd October.
 18. Bayley A C- Surgical pathology of HIV infection: Lessons from Africa- British Journal of Surgery, 77(8): 863 – 868
 19. Meagher B.R. Appendicitis in HIV-positive patients. Aust NZ J Surg. 1998;68:337–9.
 20. Morandi E, Merlini D, Salvaggio A, Foschi D, Trabucchi E. Prospective study of healing time after hemorrhoidectomy: influence of HIV infection, acquired immunodeficiency syndrome, and anal wound infection. Dis Colon Rectum. 1999;42:1140–4. [[PubMed](#)]
 21. Mugala D (1991) Outcome of Surgery in Hiv seropositive patients : A general comparative study. Dissertation for MMED degree, UNZA School of Medicine
 22. Yeung S, Wilkinson D, Escott S and GilksCF- Paediatric HIV infection in a rural South African district hospital ^Z Corresponding author/address Tel: 27 35 5500158 Fax: 27 35 5501436 E-mail: wilkinsd@mrc.ac.za
 23. Aggarwal VP- [Obstetric emergency referrals to Kenyatta National Hospital](#). East African
 24. Odimba BFK.- May General Surgery stand for meaningful tool for the welfare in the developing Countries?-Abstract in the proceedings of the Zimbabwean Surgical Society and the ASEA and the COSECSA Scientific Conference in Harare 2nd November 2004
 25. Newell ML; Ghent IAS- Mortality among infected and uninfected infants born to HIV-infected women in Africa: infants, HIV and mortality in Africa study. Program and abstracts of the 11th Conference on Retroviruses and Opportunistic Infections; February 8-11, 2004; San Francisco, California. Abstract 155.

26. Sinyinza F, Mulenga V, Lishimpi K, et al.- Prognostic markers of survival in HIV-infected children in the CHAP trial, Zambia. Program and abstracts of the 11th Conference on Retroviruses and Opportunistic Infections; February 8-11, 2004; San Francisco, California.
27. Vayena E, Rowe PJ, Griffin PD, eds. Current practices and controversies in assisted reproduction: report of a meeting on "medical, ethical and social aspects of assisted reproduction." Geneva: World Health Organization, 2002.
28. The world health report 2005: make every mother and child count. Geneva: World Health Organization, 2005.
29. Zupa J. Perinatal Mortality in Developing Countries, WHO Geneva, Vol 352:2047-2048, May, 19, 2005
30. Chokunonga E, Levy LM, Bassett MT, Borok MZ, Mauchaza BG, Chirenje MZ, Parkin DM.- Aids and cancer in Africa: the evolving epidemic in Zimbabwe. Zimbabwe Cancer Registry, Parirenyatwa Hospital, Harare
31. Parkin DM, Wabinga H, Nambooze S, Wabwire-Mangen F.- AIDS-related cancers in Africa: maturation of the epidemic in Uganda. Unit of Descriptive Epidemiology, International Agency for Research on Cancer, Lyon, France. parkin@iarc.fr
32. Parkin DM, Wabinga H, Nambooze S, Wabwire-Mangen F.-AIDS-related cancers in Africa: maturation of the epidemic in Uganda.- Unit of Descriptive Epidemiology, International Agency for Research on Cancer, Lyon, France. parkin@iarc.fr
33. Chokunonga E, Levy LM, Bassett MT, Borok MZ, Mauchaza BG, Chirenje MZ, Parkin DM.-Aids and cancer in Africa: the evolving epidemic in Zimbabwe. Zimbabwe Cancer Registry, Parirenyatwa Hospital, Harare.
34. Dua RS, , Wajed SA, and Winslet MC,- Impact of HIV and AIDS on Surgical Practice, University Department of Surgery, The Royal Free and University College Medical School, London, UK (Correspondence to Sascha Dua, 118 Eton Rise, Eton College Road, London NW3 2DD, UK M: +44 (0)7966 347244; E: Email: saschadua@hotmail.com)
35. Odimba BFK, and Arung W- The early outcomes of abdominal surgery in patients in high HIV prevalence African sittings. A descriptive and analytic study at the Lubumbashi University Clinics (DRC) and the University Teaching Hospital, Lusaka (RZ)) -9th-10th 2008 Zambia Medical Association Scientific Meeting, Cresta **Golfview** Hotel. Workshop theme: - Millennium Development Goals- where are we, HIV/AIDS, Malaria and T.B
36. Beveridge M- Research Capacity Building Partnerships: Ptolemy and the EASI- Delphi Project , Office of International Surgery, University of Toronto, Ptolemy Project research
37. Beveridge M, Burton K, Lett R, Barradas R-Priorities for Surgical Development in East Africa: Results of the East African Surgical initiative (EASI Ptolemy Project research
38. Odimba BFK- 17th-23rd December, 2005: Nosocomial HIV infection and operating rooms, Knowledge and prevention course. Workshop held in phase of UTH phases III and V staffs including medical doctors, nurses, paramedicals and general workers.