The impact of human immunodeficiency virus 1 on laryngeal airway obstruction in children

P M Jeena, R Bobat, G Kindra, P Pillay, S Ramji, H M Coovadia

PATIENTS AND METHODS

Records of all children aged 0–12 years of age, who were diagnosed with LAO in the paediatric wards and paediatric intensive care unit (ICU) at a tertiary hospital, King Edward VIII Hospital, Durban, South Africa, during 1999 were analysed retrospectively. The standard international definition of LAO was utilised. All children had the following tests performed for aetiology: blood cultures, endotracheal aspirate bacterial and viral cultures, and laryngoscopy. Relevant biopsy specimens were taken and sent for histology in selected cases. HIV infection was confirmed according to standardised international criteria.

RESULTS

All 38 children with LAO during 1999 were evaluated. Nineteen had associated HIV-1 infection, 16 were HIV-1 uninfected, while the remaining three cases had an indeterminate HIV result and were excluded. The mean age of the HIV-1 infected group was 11 months (range 1–34 months) and that of the HIV uninfected group was 26.9 months (range 2–96 months).

Laryngotracheobronchitis (LTB) was the most common diagnosis among HIV infected and uninfected children (31.6% and 31.3% respectively). In the remaining cases, oropharyngeal/laryngeal candidiasis, tuberculosis, and benign lymphoid hyperplasia were commonly diagnosed in the HIV infected group, while laryngeal papilloma was seen in the HIV uninfected group of patients. Bacterial infections caused by Haemophilus influenzae (n = 3) and Moraxella catarrhalis (n = 2) were more frequently identified in HIV uninfected children (43.7%; table 1).


discussion

In this study, HIV-1 infection was present in half of the patients admitted with laryngeal airway obstruction, creating a substantial demand for scarce ICU resources. In both HIV infected and uninfected patients, short term outcomes were equally reasonable, and patients had similar median duration of ICU and hospital stay. This justifies the continued acceptance of HIV infected with LAO to the paediatric ICU.

Abbreviations: ICU, intensive care unit; HIV, human immunodeficiency virus; LAO, laryngeal airway obstruction; LTB, laryngotracheobronchitis
Deaths in this group were caused by AIDS related diseases rather than the severity of LAO. The mortality rate of 12.3% in the HIV uninfected group with LAO was similar to reports from other HIV-1 non-endemic regions in developing countries and was related to overall poor socioeconomic condition and the overwhelming burden of infectious diseases.1

LAO can frequently be treated, and therefore the need for further aetiological investigation is imperative. Candidiasis should be treated with both topical and systemic agents (fluconazole or amphotericin B). Ketoconazole, a cheaper alternative, should be avoided if possible, because of the recent reports of hepatotoxicity. Broad spectrum penicillins could be given if bacterial LTB is suspected.

There are limitations to this study, given its small sample size and retrospective design. Interestingly, bacterial tracheitis was not a common cause of LAO among HIV infected children in this study, which is an unusual finding. However, these results provide pilot data, which will be helpful in assessing future paediatric patient populations with LAO. HIV infection should not be a deterrent for ICU care in children with LAO.

Authors’ affiliations
P M Jeena, R Babot, G Kindra, P Pillay, S Ramji, H M Coovadia, Department of Paediatrics and Child Health, Nelson Mandela School of Medicine, University of Natal, Durban, South Africa
Correspondence to: Dr P M Jeena, Department of Paediatrics & Child Health, Nelson Mandela School of Medicine, University of Natal, Private Bag 7, Congella, 4013, South Africa; jeena@nu.ac.za
Accepted 23 April 2002

REFERENCES

COMMENTS
The report by Jeena et al further substantiates the striking effects of the HIV pandemic in South Africa, where half of the children admitted to a tertiary hospital with laryngeal airway obstruction (LAO) are infected with HIV. The results are of interest given that there were differences in disease presentation, age, and aetiology between HIV infected and uninfected children. Unsurprisingly, HIV infected children had LAO more frequently due to tuberculosis, candidiasis, and lymphoid hyperplasia, all treatable conditions. However, the most striking finding was that short term outcomes, duration of hospital stay, and need for mechanical ventilation were similar for both groups of children. This was a limited study, with descriptive data, and a small sample size. Nevertheless, a convincing case is made that LAO is a reversible condition, even among HIV infected children. This undermines any proposals to prioritise ICU care to children without HIV infection on the basis that they would be more likely to survive an acute disease episode. In resource limited settings, where a paucity of critical care beds prevails, physicians not infrequently are faced with difficult decisions, such as whether to provide labour intensive, high maintenance and expensive care to a child who will die anyway of a fatal illness. In effect, colleagues working under these conditions quite often have to generate a “Schindler’s list” of patients.

ICU beds are scarce. If some form of prioritisation is necessary, should HIV ever be a criterion? In Africa such children with HIV who require ICU care generally do not have access to antiretroviral treatment.1–4 As a result of this, studies of the natural history of HIV disease show a higher rate of disease progression than in developed countries, with a substantial proportion of children achieving AIDS defining conditions by 5 years of age.13–15 However, overall infant mortality from other causes in resource poor settings is also unacceptably high,16 which has not generally been an accepted reason for denial or selection for medical care in children with potentially reversible illnesses, where one is available.

Nevertheless, it seems incongruent to deny access to antiretrovirals and then provide expensive ICU care. If antiretrovirals were available, it is possible that fewer children with HIV would require ICU care, and certain that HIV would be less often perceived as a necessarily terminal process.

In South Africa, HIV seroprevalence rates in mothers may be as high as 30%,18 with a 30% chance of mother to child HIV transmission. Therefore, three of every nine children born will be HIV exposed, and one of the three will be infected. When HIV seroprevalence rates reach such astounding figures, an exclusion policy based on HIV serology would mean denying ICU care to 10% of the paediatric population. Certainly, decisions regarding patient management should be taken regardless of HIV serology results and be based solely on the patient’s disease severity and short term prognosis.

Unavailability of specific treatment should not justify denial of critical care for HIV infected children who happen to have a reversible, emergent disease of childhood. Unavailability of treatment for HIV infection which would dramatically improve the natural history of the disease is wrong. Condemning those with HIV to have no access to ICU care for reversible conditions is also wrong. One erroneous policy does not justify another, and two wrong policies will not add up to a right one.

K Nielsen
Assistant Clinical Professor of Pediatric Infectious Diseases, Department of Pediatrics, UCLA Mattel Children’s Hospital/UCLA School of Medicine, 22–442 MDCC 10833 LeConte Ave, Los Angeles, CA 90095–1752, USA; knielsen@mednet.ucla.edu

REFERENCES
1 Zwi K, Soderlund N, Schneider H. Cheaper antiretrovirals to treat AIDS in South Africa. They are at their most cost effective in preventing mother to child transmission. BMJ 2000;320:1551–2.