Research from the South

HIV infection in patients admitted to a general hospital in Malawi

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TABLE I—Age distribution of medical inpatients of Zomba General hospital during 1986–8 who were positive for HIV antibody. Figures in parentheses are percentages

Age (years)	Men (n=171)	Women (n=181)
<20	5 (3)	21 (12)
20–29	74 (43)	127 (70)
30–39	64 (38)	33 (18)
40–49	21 (12)	
≥50	7 (4)	

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There is a relative lack of information about patterns of disease in patients positive for HIV antibody in Africa. The AIDS epidemic is affecting African countries with limited resources for health care, and this, together with political constraints, has restricted research. I report a study of HIV infection in Zomba General hospital while I was working there.

Patients, methods, and results

This hospital is the district hospital for Zomba (population 438 150 from the 1987 census) and also takes referrals from two other districts. With 304 beds it is the third largest hospital in Malawi. About 300 patients are admitted for medical reasons, including tuberculosis, each month.

I kept a record of all medical patients admitted between September 1986 and October 1988 who were positive for HIV antibody. Their sex, age, and clinical details were recorded. The presence of major and minor signs according to the World Health Organisation's definition of a clinical case of AIDS was noted. Tests for HIV antibody were performed only if immune deficiency was suspected. The box shows the criteria used from mid-1987 for requesting tests. The tests yielded a high proportion of positive results: 151 out of 209 tests (72%) performed on inpatients between May and October 1988 yielded positive results.

Before April 1988 serum was sent to the central hospital laboratory in Blantyre for testing HIV antibody by enzyme linked immunosorbent assay

Criteria for testing inpatients of Zomba General Hospital for HIV antibody

Clinical aids

Based on the World Health Organisation definition of a clinical case of AIDS: two or more major signs and one or more minor signs in the absence of other causes

Unexplained major signs

Specific diagnoses and conditions

Atypical Kaposi's sarcoma
Suspected pneumocystis pneumonia
Oesophageal candidiasis
Herpes zoster
Persistent generalised lymphadenopathy
Lymphomas
Multiple infections
Unexplained and unresponsive anaemia
Unexplained neurological signs

Cases of tuberculosis

With other major or minor signs
Miliary tuberculosis
Extracervical tuberculosis lymphadenitis
Pleural and pericardial tuberculosis
Unresponsive tuberculosis
Relapsed cases (despite full treatment)
Drug reactions

(ELISA). From April testing by ELISA (Wellcozyme) was performed in Zomba. Tests that yielded weak positive results were repeated but confirmatory tests (by ELISA or western blotting) were not performed routinely.

Between September 1986 and October 1988, 352 inpatients (171 men) were diagnosed as having illnesses related to HIV infection. The average age of the men was 31.4 years (range 17–66) and of the women 24.1 years (15–39). Sixty two patients died in hospital. The average number of patients admitted who were positive for HIV antibody rose from two a month at the end of 1986 to over 30 a month by the third quarter of 1988 (figure). Table I shows the age distribution of the patients.

Tuberculosis was the commonest infection related to HIV and accounted for 115 admissions (table II). "Slim disease," in which the clinical picture is dominated by chronic diarrhoea and weight loss, accounted for 68 admissions. Sixty five patients were admitted with other forms of wasting caused by HIV and characterised by weight loss and fever.

Aggressive Kaposi's sarcoma was diagnosed in 16 patients and eight were suspected of having *Pneumocystis carinii* pneumonia, but this diagnosis could not be confirmed because there were no facilities for transbronchial biopsy or bronchopulmonary lavage. Nineteen patients were admitted with severe herpes zoster, and 10 had oesophageal candidiasis.

TABLE II—Number of patients positive for HIV antibody (n=352) who were admitted to Zomba General Hospital with tuberculosis during 1986-8

Type of tuberculosis	
Sputum positive for <i>Mycobacterium tuberculosis</i>	43
Miliary	7
Lymphadenitis	13
Pleural effusion	44
Pericardial effusion	8
Total	115*

*Eight reacted to treatment.

Table III gives the numbers of patients with major and minor signs according to the World Health Organisation's definition of a clinical case of AIDS. Other findings included anaemia (haemoglobin concentrations <60 g/l) in 28 patients, massive splenomegaly (spleen >10 cm) in five, unilateral facial palsy in six, paraplegia in two, and hemiplegia in two.

TABLE III—Number of medical inpatients in Zomba General Hospital during 1986-8 who were positive for HIV antibody with major and minor signs according to World Health Organisation's definition of a clinical case of AIDS

Sign	No
Appreciable weight loss	277
Chronic diarrhoea	136
Prolonged fever	174
Chronic cough	182
Generalised lymphadenopathy	95
Herpes zoster	32
Generalised rash	28
Oropharyngeal candidiasis	80
Herpes simplex	2

Discussion

The first patient identified as having AIDS in Malawi presented early in 1985, and a further 12 cases were diagnosed during that year.¹ The number of cases has risen steadily since. The increasing numbers of cases diagnosed over time in Zomba partly reflects an improved awareness of the modes of presentation of HIV infection, although from mid-1987 the same criteria were used to decide on testing. The total number of patients positive for HIV antibody was underestimated in this study because not all of the serological tests that were requested were performed: several patients died before blood samples were taken; specimens got lost; test kits were often in short supply; and delays sometimes led to specimens becoming unsuitable for analysis. Similar numbers of men and women were positive for HIV antibody, and the peak age at infection was 20 to 30. These results are similar to those of studies in other African countries and are compatible with a predominantly heterosexual transmission.²

A different pattern of infections related to HIV in Africa from that seen in the West is well documented, and tuberculosis is emerging as an important problem in immune deficiency.³ Although tuberculosis was the commonest infection related to HIV in this study, only a small proportion of all the patients admitted with tuberculosis were tested for HIV antibody. Table IV shows the numbers of patients with tuberculosis who were treated from the beginning of 1986 to the end of

September 1988. The rise in the number of cases may have been related to the AIDS epidemic, but other explanations are possible.

TABLE IV—Number of patients treated for tuberculosis in Zomba General Hospital during 1986-8 and number whose sputum was positive for *Mycobacterium tuberculosis*

	All patients	Patients with sputum positive for <i>M. tuberculosis</i>
Jan-March 1986	148	74
April-June 1986	164	79
July-Sept 1986	164	87
Oct-Dec 1986	128	79
Jan-March 1987	164	95
April-June 1987	175	103
July-Sept 1987	165	88
Oct-Dec 1987	169	100
Jan-March 1988	185	106
April-June 1988	164	85
July-Sept 1988	205	111

The World Health Organisation's definition of a clinical case of AIDS was useful but had limitations, especially in the guidelines for excluding other causes. Because tuberculosis can itself cause many of the signs of AIDS most of the patients with tuberculosis could not be classified as having AIDS. After the patients with tuberculosis were excluded most of the patients positive for HIV had clinical AIDS.

The magnitude of the AIDS epidemic in Malawi has been seriously underestimated. The number of cases of AIDS is increasing relentlessly, and soon HIV infection will be the commonest cause for admitting adults to hospital. By the middle of 1988 over 10% of all the patients admitted to the medical wards of the hospital had illnesses related to HIV. Early immune deficiency in many other patients may have gone undiagnosed. The further spread of HIV infection is inevitable, and 10 to 20 times more cases of AIDS will occur over the next five years in people already infected with the virus. Malawi, like many countries in sub-Saharan Africa, has limited resources for health care, and these will be stretched further by the increasing number of cases.

Because the main mode of transmitting HIV in Malawi is heterosexual intercourse there are no real high risk groups to which HIV infection has been confined. This makes controlling the spread of the virus difficult. Only half of the government district hospitals in Malawi have facilities for screening for HIV antibody, there is no national blood transfusion service, and for cultural reasons blood donors are difficult to recruit. A considerable proportion of blood for transfusions is therefore unscreened. Nearly all injections are given with reused needles, many by untrained traditional practitioners working outside the health service, who also use scarification as a common treatment. Realistically to reduce neonatal infection would entail regular screening of all women of child-bearing age.

The AIDS epidemic is having serious social and economic effects. Most patients are in the economically productive age groups. A disproportionate number are from the educated, urban population that a developing country cannot afford to lose. Sexual partners of infected people are likely to become infected eventually and their children be left orphaned. The tragedy of HIV infection in Africa is that for millions of people it is already too late.

1 Cheesbrough JS. Acquired immunodeficiency syndrome in Malawi. *Journal of the Medical Association of Malawi* 1986;3:5-13.

2 Quinn TC, Mann JM, Curran JW, Piot P. AIDS in Africa: an epidemiologic paradigm. *Science* 1986;234:955-63.

3 Goldman KP. AIDS and tuberculosis. *Br Med J* 1987;295:511-2.

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