AIDS: global impact and the implications for S E Asia

R Ismail, *MB BS, MRCP (UK), Dip Derm (Lond), Dip Ven (Lond)*

Dr Rokiah Ismail is an Associate Professor of Medicine at the University of Malaya in Kuala Lumpur, where she graduated before going to the UK and obtaining the MRCP and Diplomas in Dermatology and in Venereology. In 1985 she foresaw the coming importance of HIV infection and AIDS and in 1987/88 she received a first Fulbright grant to study AIDS in New York. Then in 1989/90 she received a Senior Commonwealth Fellowship to study it in the UK, and later a second Fulbright grant to work further on AIDS in Philadelphia.

Introduction

The AIDS epidemic has been with us for more than a decade. The first AIDS case was reported in 1981 in California, USA, in a gay man. The condition was at first known as the 'gay men's disease', but was very soon seen to be spreading rapidly in the heterosexual population. In the very early stages of the epidemic it was thought that AIDS was a disease of the Western world, until the African continent was found to be hard hit in the mid-1980s and it was realized that spread to the rest of the developing world — where it will inevitably have enormous impact — was imminent.

The recent rapid rise of HIV infection in India and Thailand is cause for concern. Poverty, large family households, and the need to earn to survive, leads to the commercialization of sex. Workers migrate to cities to find jobs and family units are disrupted; this, together with poor access to healthcare, may cause the spread of HIV infection in the developing countries of Asia eventually to outstrip what has been seen in Africa.

The virus, immunology, and transmission

The human immunodeficiency virus-1 (HIV-1) is the causative organism for the development of AIDS (acquired immunodeficiency syndrome). Two types of HIV virus, which belongs to the group of retroviruses, are known — HIV-1 and HIV-2. Infection caused by HIV-2 is less severe than that by HIV-1.

Upon entry into the human body, the virus binds to the CD4 receptors on CD4+ T-lymphocytes (T_4 cells). It then uncoats itself and enters the cell. Within the CD4+ lymphocyte, with the help of reverse transcriptase, it then replicates and eventually destroys the CD4+ cell. With time, the CD4+ lymphocyte count declines, thereby crippling the function of the immune system and increasing the host's susceptibility to opportunistic infections. There are three major modes of transmission of HIV:

- sexual intercourse, with exchange of body fluids from an HIV-infected sex partner to the uninfected partner;
- exposure to infected blood or body fluids through sharing of needles by intravenous drug abusers, reuse of contaminated needles, transfusion of infected blood or blood products, or transplantation of infected organs; and

• from an infected mother to her unborn child — antepartum during vaginal delivery or postpartum in the course of breastfeeding.

HIV-1 infection has a long asymptomatic phase (or incubation period) from the time of infection to the development of opportunistic infections that signify progression to AIDS. This period can be as long as 5–8 years. Because of this long incubation period and the asymptomatic nature of HIV carriers, it is difficult to assess the actual extent of the problem in any particular country. And if people do not perceive any risk of getting HIV, they do not take HIV-antibody tests, so they may unknowingly be spreading the virus in the community by unsafe sexual practices. This is the 'silent' phase of the HIV epidemic.

The AIDS epidemic

After a time most HIV-infected individuals will progress to AIDS and develop opportunistic infections and unusual tumours such as Kaposi's sarcoma. The frequency and severity of opportunistic infections may put further strain on the patient, his family, and national resources. This in itself will decrease the productivity and consequently the income of the family.

Characteristics of developing countries in Asia

The population of Asia (including China and India) comprises more than one-half of the world's population, with a high proportion of the population below 50 years of age, and high birth rates.[1] Migration from rural areas to cities to find employment is common with, as has been mentioned, consequent breakdown of family unity and loss of family ties; there may also be changes in social and cultural norms, which may lead to loss of inhibitions and so, coupled with loss of religious beliefs, to promiscuity and to increasing incidence of sexually transmitted diseases and HIV infection.

Compared with the West, a major part of this region is still underdeveloped. The cities are overcrowded with high unemployment rates, poor living conditions, and poverty, which commonly leads to development of a flourishing commercial sex industry.

Implications

There is as yet no cure for HIV infection: vaccine development is still in its infancy and no effective vaccine is likely to be developed before the turn of the century. Therefore primary prevention is the only effective method of preventing the spread of HIV.

WHO (World Health Organization) estimates that in mid-1994 there were more than 17 m HIV-infected persons worldwide, over 16 m of them adults, and more than 2.5 m of them in South East Asia.[2] Currently, in some countries like Malaysia, 70–80% of HIV-positives are intravenous drug users (IVDUs), but in others, like Thailand and India, heterosexual transmission is perhaps the main mode of spread. Overall it is believed that 75% of infections in adults are believed to be sexually acquired. I believe that in South East Asia HIV is spreading rapidly in the heterosexual population and that the high proportion of IVDUs found among HIV-positives in Malaysia is the result of active testing of IVDUs before admission to rehabilitation centres.

In South East Asia the male-to-female ratio of HIV infection is still between two and three to one [though elsewhere the

proportion of women is steadily increasing].[2] The epidemic is likely first to become obvious among sex workers and their clients and then to spread to the general population.

The rapid rise in new infections in Asia is of grave concern, especially as the infection is now believed to be spreading faster in this region than anywhere else — it is estimated that 1 m Asians are now becoming infected annually.[3]

As mentioned earlier, the majority of the population in this region belongs to the younger age groups that form the backbone and the workforce of their countries and are essential for national development. If a high proportion of this important sector of the population becomes infected with HIV, the economic repercussions on their countries will be enormous.

In order to measure the impact of the HIV epidemic on any country, it is necessary to assess the magnitude and severity of poverty, besides looking at economic growth. And for forward planning in allocation of budgets for healthcare to HIV-infected persons, it is necessary to carry out a nation-wide HIV seroprevalence study.

At national level, HIV can reduce productivity due to loss of man-hours of work through ill health, hospitalization, and premature death. Loss of income due to illness, disability, or premature death, coupled with expenses for medical care and hospitalization, has a disastrous effect on both infected individuals and their families. It is now recognized that even moderately wealthy persons can be impoverished from the burden of HIV infection, and those initially poor become completely destitute. As the epidemic spreads, social structures may break down, and family units may be disrupted when one member of the family is found to have become infected.

The direct costs of medical care, hospitalization, nursing care, and medications, combined with the indirect costs of resultant loss of productivity, can cripple a national economy.

It is difficult to measure the impact of HIV infection on any society; but, knowing the pattern of spread, the estimated number of infected individuals, and the demography of the population, it can be postulated that the worst impact of HIV infection will be felt in developing countries on account of their young working populations.

The costs of treating HIV infection and AIDS-related illnesses put a tremendous financial burden on any country, but especially so on
where the budge
care may be a fract
countries. HIV in
by episodes of o
and demand for d
fections, frequen
and provision of h
overstretch any
coupled with loss
ductivity will alm
developing natio
the annual per c
patients with HIV
veloping countrie
per capita gross n

In Tanzania, for
for AIDS patient
181% of GNP per
the year 2000, the
AIDS will be appr
In several African
more than 50% o
occupied by patie
AIDS-related dise

What does all th
ing countries in So
• a large proporti
are young and sex
of them there is a
sex industry • IV
needles and • acc

Scientific backing for folk remedies

Scientific studies of the wound-healing properties of traditional dressings of mouldy bread or fungi have led a British company to plan development of fungus-based surgical dressings. The most effective mould, *Phycomyces blakesleeanus*, contains most chitin, a cell-wall constituent, and the related chitosan. Laboratory studies found that exposure of fibroblast cells to chitin or chitosan encouraged fast growth of fibroblasts, which are involved in wound healing. It is thought that the success of these dressings is due to the hydrogen peroxide produced on oxidation of chitosan. Patents have been taken out on the process of growing the mycelia in bioreactors, and absorbent dressings have already been made. Clinical trials would have to be carried out before the dressings could be marketed.

New Scientist 25 Mar: 21

Indian cholera str

The strain of cholera
scientists as 0139. It
the current pander
thought that the ge
the 01 strain from ar
attack the 01 strain c
unchallenged. It appe
finding which has im

pecially so on developing countries where the budget allocation for healthcare may be a fraction of that of developed countries. HIV infection is characterized by episodes of opportunistic infections, and demand for drugs to combat such infections, frequent hospital admissions, and provision of healthcare services will overstretch any health budget. This coupled with loss of work-hours and productivity will almost certainly cripple a developing nation's economy. Indeed, the annual per capita cost of care for patients with HIV and AIDS in many developing countries far exceeds the entire per capita gross national product (GNP).

In Tanzania, for example, hospital care for AIDS patients costs approximately 181% of GNP per capita; in Thailand, by the year 2000, the cost of care for HIV/AIDS will be approximately US $9 billion.[3] In several African countries, it is seen that more than 50% of the hospital beds are occupied by patients being treated for AIDS-related diseases.[3,4]

What does all this mean to the developing countries in South East Asia? Because ● a large proportion of their populations are young and sexually active ● in some of them there is a thriving commercial sex industry ● IVDU commonly share needles and ● access to educational materials is limited,[5] these countries are likely to be the scene of the next explosion of HIV infection.

Conclusion

To sum up, unless the countries of South East Asia take timely and aggressive measures they may be faced with economic paralysis and a change in their population structure.

■

References

1. *The World Almanac and Book of Facts 1991*. New York: World Almanac
2. *The HIV/AIDS pandemic: 1994 overview*. World Health Organization Global Programme on AIDS. WHO/GPA/TCO/SEF/94.4.
3. *The evolution of the HIV pandemic in the developing world*. Washington DC: The US Agency for International Development Program for Prevention and Control of HIV Infection/US Agency for International Development; 1993: 12.
4. AIDS: the third wave. *Lancet* 1994; 343: 186–8.
5. Ismail R. STD and AIDS in South East Asia. Dermatology: progress and perspectives. In: *Proceedings of the 18th World Congress of Dermatology, New York, June 12–18, 1992*. New York/London: Parthenon Publishing, 1993:347–9.

Indian cholera strain identified

The strain of cholera which caused the epidemic in India in 1992 has been identified by Dutch scientists as 0139. It appears the only differences between this new strain and the 01 strain of the current pandemic in many tropical countries are the sugars in the bacterial cell wall. It is thought that the genes controlling production of these sugars were transferred to the DNA of the 01 strain from another, normally harmless, strain. People's immune systems which would attack the 01 strain do not, however, recognize the new coating, allowing the new strain to go unchallenged. It appears that strains of *Vibrio cholerae* have exchanged genes fairly regularly, a finding which has implications for any cholera vaccine.

New Scientist 25 Feb: 14