

## HIV infections in obstetrics and gynaecology

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### SUMMARY

Thirteen women were discovered to be positive for human immunodeficiency virus (HIV) infection during pregnancy at the Port Moresby General Hospital from 1988 to 1995; of these, eight were diagnosed in the first half of 1995. Risk testing for HIV status is unlikely to discover more than 20% of HIV-positive antenatal patients because risk factors target intravenous drug users and the sexual behaviour of men. Pregnancy does not seem to have a major impact on the progress of HIV disease, but could be detrimental particularly in the later stages of the disease. Especially in developing countries, where HIV-positive patients are more likely to be of poor nutritional status and burdened with a number of other infections, there is a higher risk of preterm labour, small-for-dates babies and chorioamnionitis in pregnancy. The risk of vertical transmission is increased when viral loads are high, the general maternal condition is poor and delivery is preterm. Rates in Papua New Guinea appear to be following the higher rates which have been reported from Africa. Gynaecological conditions found in association with HIV infection, including pelvic inflammatory disease, vulvovaginal candidiasis and cervical neoplasia, may be resistant to treatment and tend to recur. Contraception for HIV-positive women may be more important to them than prevention of viral transmission; Depo-Provera and tubal ligation have special benefits in this regard. HIV infection in association with psychiatric disturbance might be an indication for termination of pregnancy.

### Introduction

In the USA, Australia and Europe the human immunodeficiency virus (HIV) epidemic began in the early 1980s in the male homosexual community. It began in Africa at about the same time, but there it was basically a heterosexually transmitted infection. By 1993 the Centers for Disease Control (CDC) in Atlanta had recorded 250 000 cases of AIDS (acquired immune deficiency syndrome) in United States adults; of these only 27 500 (11%) had occurred in women, of whom over half had been reported since 1990. The figures from Africa, however, show that the sex distribution is fairly even (1). Papua New Guinea (PNG) seems to be following the African experience where infection is usually heterosexually transmitted and the sex ratio of prevalent cases is about one to one.

Much of the study of the natural history of HIV infection derives from data generated in

the USA, and in particular from a cohort of gay and bisexual men which began in 1982. The findings are not very applicable to developing countries, nor very relevant to women. It is only in the past 3 years that information specially pertaining to women has begun to appear in the literature (Table 1).

Sexual transmission of HIV is 2-16 times more effective from male to female than vice versa. The risk of transfer depends upon factors in the woman which can result in more abrasion of the lower genital tract during intercourse, e.g. nulliparous women, virgins and those with cervical ectropion and ulcerative lesions of the vulvovaginal areas. Genital ulcers in men can also promote transfer of the infection to a woman.

### Serodiagnosis, diagnostic problems and prevalence of HIV in women

Traditionally, serological testing for HIV has

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TABLE 1

RATES OF HIV PREVALENCE IN ANCs IN VARIOUS PARTS OF THE WORLD

| Locality                 | Prevalence<br>/1000 | Number | Year      |
|--------------------------|---------------------|--------|-----------|
| USA<br>(various states)  | 0.1 – 5.8           |        | 1990-1992 |
| Inner London             | 1.5                 |        | 1992      |
| Edinburgh                | 2.5                 |        | 1991      |
| Paris                    | 2.8                 |        | 1992      |
| Bangkok                  | 7                   |        | 1992      |
| Kinshasa (Congo)         | 50                  |        | 1989      |
| Nairobi (Kenya)          | 180                 |        | 1991      |
| Uganda (Urban)           | 240 – 310           |        | 1990      |
| (Rural)                  | 190 – 210           |        |           |
| PMGH 1988                | 0                   | 0/5000 | 1988      |
| PMGH 1993                | 0                   | 0/1446 | 1993      |
| PMGH 1994                | 0.8                 | 3/3700 | 1994      |
| PMGH 1995 (to September) | 2.0                 | 8/4100 | 1995      |

ANC, antenatal clinic

PMGH, Port Moresby General Hospital

been on the basis of clinical suspicion of AIDS-related disease or behavioural risk factors. AIDS disease is the endpoint of the infection, and the behavioural risks (except for intravenous drug abuse) have been designed to pick up male carriers of the virus.

It has been discovered by doing seroprevalence surveys that testing on the basis of risk behaviour only picks up 10-20% of HIV-positive women in antenatal clinics (2,3). Many women are infected by their husbands and are far from promiscuous themselves, neither do they inject drugs.

Moreover, *Pneumocystis carinii* pneumonia (PCP), the most common AIDS-defining illness in both men and women, can easily be

confused with hysterical hyperventilation, a condition more common in women. Cancer of the cervix (the only specifically female AIDS-defining illness) has only recently (1993) been added to the list of AIDS-defining illnesses.

In the Port Moresby General Hospital (PMGH) antenatal clinic (ANC), of the eleven HIV-positive women diagnosed over the past two years, only four had more than two sexual partners since 1992, only one was also syphilis serology positive and none were intravenous drug users. It was possible to obtain a sexual contact history from the current partners of 5 of the 7 currently with partners: 4 of these men acknowledged more than 4 partners since 1992.

It is likely, therefore, that in PNG risk

testing in antenatal women would pick up as small a percentage of positive cases as it does elsewhere.

In the USA, among HIV-positive antenatal women 82% were asymptomatic at the time of diagnosis, 12% had HIV-related symptoms (e.g. thrush or diarrhoea) and only 6% had CDC-defined AIDS. At PMGH none of those diagnosed from serosurveillance had AIDS, and one had HIV-related symptoms (chronic diarrhoea). However, in the years when serosurveillance was not being carried out, two AIDS cases were diagnosed among the PMGH antenatal population. One woman had drug-resistant pulmonary tuberculosis and another gross wasting and chronic diarrhoea.

AIDS is now the commonest cause of maternal death in the USA, and the fifth commonest cause of death in women of reproductive age (4). It accounts for 90% of deaths in women of reproductive age in central Africa. Death usually occurs in the third trimester as CD4 lymphocyte counts reach a nadir and opportunistic infections supervene.

#### **The effect of pregnancy on the progression of HIV infection**

The impact of pregnancy on the progress of HIV disease is difficult to ascertain as there have been no properly controlled prospective studies, and most HIV infection in antenatal women is diagnosed during pregnancy by various kinds of serosurveillance. Surrogate markers of clinical progress such as numbers of CD4 lymphocytes and immune activation markers are still being studied.

The current consensus is that there may be a small deleterious effect of pregnancy on HIV disease progress, but that this is variable, and there is more likely to be an effect in the later stages of the disease.

#### **Pregnancy in women with HIV infection**

The impact of HIV infection on pregnancy is also variable and more likely to be seen in the later stages of the disease and where the woman is in poor general condition because of infections (e.g. malaria, tuberculosis, anaemia etc.) or poor nutritional status.

Thus studies done in western countries usually show little significant difference between HIV-positive individuals and controls for various pregnancy complications; however, in developing countries pregnancy complications are more prominent.

Large studies performed in the Congo and Haiti (5,6) revealed a significant association of preterm labour, intrauterine growth retardation (IUGR) and chorioamnionitis with HIV-positive status. A study in Kenya found that spontaneous abortion was slightly more common in HIV-positive women (6).

In PMGH, of the 13 known HIV-positive viable pregnancies, 2 are still undelivered and 5 (50%) have been associated with preterm labour and degrees of IUGR (small-for-dates babies).

HIV infection does not appear to be teratogenic.

#### **Vertical transmission of HIV infection**

The difficulty in diagnosing HIV infection in the first year of life makes comparison of transmission rates from various parts of the world somewhat unreliable. However, there is no doubt that there are wide disparities in transmission rates between western countries and many parts of the developing world. The CDC diagnostic definition of persisting antibody in the baby after 15 months of age probably overestimates the transmission rate by about 10%; however, there are some babies who succumb to AIDS before 15 months of age and they will be excluded from the definition. With good general and medical care some children have survived into their early teens. In developing countries infected babies are more likely to die in infancy.

The timing of the passage of the HIV infection to the fetus is critical to the formulation of appropriate recommendations about the continuation of pregnancy and the obstetric care in pregnancy.

Examination of fetal tissue from abortuses in the USA has shown that by eight weeks of gestational age fetuses of HIV-positive mothers may be infected with the virus (7). Because of the poorer neonatal outcomes seen in

**TABLE 2**

**HIV VERTICAL TRANSMISSION RATES FROM VARIOUS PARTS OF THE WORLD**

| <b>Location</b> | <b>Transmission rate %</b>        | <b>Comments</b>                                     |
|-----------------|-----------------------------------|---|
| USA             | 15 – 30                           | Various states                                      |
| Europe          | 14.4 overall<br>30 in acute phase | Large multicentre European Collaborative Study 1992 |
| Africa          | 30 – 40                           | Various studies                                     |
| PMGH            | About 30 – 40                     | Small figures so far                                |

PMGH, Port Moresby General Hospital

developing countries it may be that placental infection is more likely in the more advanced stages of the maternal disease and if the maternal general condition is poor.

There is a good evidence that some babies become infected during passage through the birth canal by contact with maternal blood and cervical mucus since the first twin transmission rate is double that of the second twin and caesarean delivery seems to decrease transmission slightly.

Some infants are infected postpartum through breastfeeding and other maternal contact; however, because of the risk of bottlefeeding in developing countries, breastfeeding is recommended for HIV-positive mothers (4).

In the European Collaborative Study a 30% vertical transmission rate was found if the acute stage of the HIV infection occurred during the first or second trimester, but the overall rate of vertical transmission in this group was 14.4% (8). In developing countries the rates are higher (Table 2).

Vertical transmission rates depend upon the degree of viraemia (i.e. the stage of the disease process), the presence of associated maternal disease such as malaria, anaemia or chorioamnionitis, the levels of maternal antibodies, the woman’s genotype (certain HLA types are associated with a greater risk of

transmission) and the gestation at delivery. Preterm delivery significantly increases the risk of vertical transmission probably because maternal antibody transfer is less to the preterm fetus.

Zidovudine (ZDV/AZT) may decrease transmission to the fetus and should be given (if available) in the late stages of the disease when transmission is more likely. Trials of HIV hyperimmune globulin, human anti-HIV monoclonal antibodies, other systemic anti-HIV drugs and vaginal application of antiviral drugs are all being tested at the moment to see if they can decrease the rates of vertical transmission.

**Drugs and interventions during pregnancy**

ZDV/AZT does not cause any specific problems related to pregnancy. PCP should be treated aggressively with cotrimoxazole, dapsone or aerosol of pentamidine.

**Changes in obstetrical practice for HIV mothers**

1. *Blood transfusions*

The variable window period – the time between the onset of infection and the appearance of testable antibodies in the blood – means that some screened blood in the blood bank may be infected with HIV. Blood transfusion should therefore be given only in life-saving circumstances.

## 2. *Maternal-fetal leakage*

Situations and manoeuvres which risk leakage of blood from the mother to the fetus should be avoided, e.g. external cephalic version, amniocentesis, chorionic villus biopsy and any trauma to the maternal abdomen.

## 3. *Minimize contamination of the fetus or baby with maternal body fluids*

- Clamp the cord early.
- Perform artificial rupture of membranes (ARM) late.
- Make judicious use of oxytocin augmentation of labour in the presence of spontaneous rupture of membranes (SRM) or ARM to shorten the interval between rupture of the membranes and delivery.
- No scalp electrodes.
- No fetal blood sampling.

## 4. *Assisted deliveries*

- Use a soft ('Silc') cup for vacuum extraction rather than the metal cups.
- Do not use forceps.
- Carry out blunt dissection at caesarean section to avoid nicking the baby's head.

## 5. *Care of the newborn*

- Wipe the cord clear of maternal blood before clamping it.
- Rinse baby after birth to remove maternal blood and other body fluids.
- Do not remove the vernix: it is protective.
- **Do not** suck out the baby if there is no meconium present: if there is meconium present, suck out gently so as not to abrade the nasopharynx.

## 6. *Do not insert cervical sutures for 'incompetent cervix' management.*

## Gynaecological conditions

### 1. Pelvic inflammatory disease (PID)

This is the commonest serious gynaecological disease in PNG. The mode of spread of PID is the same as HIV. Unless a dramatic change occurs soon in sexual behaviour then one can expect that HIV will become as common as PID in the next decade.

PID in association with HIV infection usually does not show much of a rise in white cell count. There is more likely to be pus formation, in which case surgical intervention is indicated early. Antibiotic treatment should be aggressive. Because of the socioeconomic problems that might be present and the difficulty of follow-up, it is a good idea to admit PID patients who are HIV positive.

### 2. Vulvovaginal candidiasis

At the moment in PNG we associate this condition with diabetes. These cases can be quite resistant to treatment and may need constant application of broad-spectrum antifungals (e.g. clotrimazole) for relief of symptoms. The progress of candidiasis in HIV-infected women is often vulvovaginal to oropharyngeal to oesophageal: the latter two candida infection sites in adults are AIDS-defining conditions.

### 3. Cervical neoplasia

The majority of women with HIV infection have abnormal cervical cytology (Pap smears). The rate of progress of neoplastic disease of the cervix is much faster in the HIV-infected woman. The recurrence rate of disease after treatment is also high. In the immunocompetent woman, one-third of cervical dysplasia reverts to normal without treatment, about one-third persists and one-third progresses to invasive cancer. HIV infection increases the proportion of dysplasia which persists and progresses to malignant disease. Cervical cancer has recently been added to the list of AIDS-defining diseases.

### Fertility management

Barrier methods of family planning will prevent transmission of the disease, but

pregnancy prevention may be more important to the individual woman than viral transmission, especially if both partners are seropositive. Depo-Provera and the pill would be suitable in these circumstances. Although there has been theoretical concern expressed about the immunosuppressive effects of oestrogen there is no evidence that oestrogen-containing oral contraceptive pills promote the progression of HIV disease.

Intrauterine contraceptive devices (IUCDs) are not recommended because of the immunoincompetence in HIV infection.

HIV infection could lead to a legal indication to terminate pregnancy in Papua New Guinea if the combination of HIV infection and psychiatric disturbance was considered life-threatening. However, since the HIV infection is progressive and untreatable one would need to propose tubal sterilization at the same time to make the indication credible. Because of the difficulty many PNG women find in using temporary methods of contraception in unstable social situations, and especially when the HIV infection is discovered antenatally, it would be reasonable

to counsel most HIV-positive women antenatally with regard to tubal ligation.

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