

SHORT REPORTS

Infertile Women in Developing Countries at Potentially High Risk of HIV Transmission

Mario Samucidine,¹ Jorge Barreto,² Elena Folgosa,³ Celso Mondlane,² and Staffan Bergström⁴

ABSTRACT

One hundred infertile women and 200 proven fertile women were recruited in Montepuez District, northern Mozambique, in order to elucidate the risk of syphilis and HIV seropositivity. TPHA seropositivity occurred in 55.0 per cent of infertile and 18.5 per cent of fertile women (OR 4.7; 95% CI 3.0-7.4). Among women with ≥ 2 lifetime spouses, 64.6 per cent of infertile women were TPHA seropositive, compared to 22.3 per cent of fertile women (OR 7.1; 95 % CI 3.6-14.1). Three women (all infertile) had HIV-1 antibodies and one, fertile, had HIV-2 antibodies. It is concluded that infertile women constitute a group at potentially high risk of HIV infection once this infection is introduced into the community. (*Afr J Reprod Health* 1999; 3 [1]:98-102)

RÉSUMÉ

Les Femmes Infertiles dans les Pays en Voie de Développement Potentiellement Exposées à un Risque Elevé de Transmission du VIH. Cent femmes infertiles et 200 femmes dont la fertilité était prouvée furent recrutées dans le district de Montepuez dans le nord du Mozambique, afin d'élucider leur risque de séropositivité au syphilis et au VIH. La séropositivité au TPHA était décélée chez 55.0% des femmes infertiles et chez 18.5% des femmes fertiles (or 4.7; 95% CI 3.0-7.4). Parmi les femmes ayant eu moins de 2 époux au cours de leur vie, 64.6% des femmes infertiles étaient séropositives au TPHA, comparé à 22.3% des femmes fertiles (or 7.1 ; 95% CI 3.6-14.1). Trois femmes (toutes infertiles) avaient des anticorps du VIH-1 et une, fertile, avait des anticorps du VIH-2. La conclusion a été faite que les femmes infertiles constituent un groupe potentiellement exposé à un risque élevé d'infection de par le VIH, une fois que le VIH est introduit dans la communauté. (*Rev Afr Santé Reprod* 1999; 3 [1]:98:102)

KEY WORDS: *Infertility, syphilis, HIV infection*

¹Dept. of Obstetrics and Gynaecology, Eduardo Mondlane University, Maputo Central Hospital, Maputo, Mozambique, ²Dept. of Immunology, National Institute of Health, Ministry of Health, Maputo, Mozambique, ³Dept. of Microbiology, Eduardo Mondlane University, Maputo, Mozambique, ⁴Division of International Health (IHCAR), Karolinska Institutet, Stockholm, Sweden.

Correspondence to: Prof. Staffan Bergström, Division of International Health (IHCAR), Dept. of Public Health Sciences, Karolinska Institutet, SE-171 76 Stockholm, Sweden.

Introduction

In societies where children are highly valued for traditional and economic reasons, childlessness is a feared condition. In various parts of Africa this problem has reached alarming rates. Studies in the seventies on women at the end of their fertile period revealed that, in some areas (south-western Sudan), up to 50-60 per cent may not have any surviving child.¹ Since the seventies, the magnitude of the childlessness problem in Third World countries has gradually been clarified,² and the childlessness problem is quite variable with fairly low prevalences (5-15%) in some countries, concomitant with figures like the one quoted above for some areas of the Sudan. Increasing research efforts have been undertaken to address the problem of reproductive failure.³

In conventional terminology, infertility is often confused with the broader concept of childlessness. The latter, however, includes not only infertility, but also pregnancy wastage and child loss.² It is well-known that miscarriage in the second trimester⁴ and foetal death in the third trimester⁵ can be caused by syphilis and can contribute to childlessness. Since different sexually transmitted diseases (STDs) can be acquired simultaneously, tubal blockage (infertility) by infection with *Neisseria gonorrhoeae* or *Chlamydia trachomatis*, can follow or be provoked by pregnancy wastage due to *Treponema pallidum* infection.

The fate of the childless woman is often stigmatisation, divorce, and ostracism. The implicit economic insecurity may lead to prostitution or other forms of commercial sex.⁶ One of the few means she has to regain respect, recognition and value is to prove her fertility. To achieve this she may need to have unprotected sexual intercourse with several partners. In a society in which syphilis and HIV infection are prevalent, the risk of acquiring these diseases may be substantial.

The purpose of this study was to elucidate to what extent women seeking treatment for in-

fertility are at risk of having acquired HIV and/or syphilis infection.

Material and Methods

Setting

At the rural hospital of Montepuez District, Cabo Delgado Province, northern Mozambique, 100 consecutive women (cases) seeking help for alleged inability to conceive were enrolled in the study. All these women had their homes in rural zones. At the time of the study, Montepuez had approximately 52,000 inhabitants, out of whom 15,000-20,000 were refugees who came from neighbouring areas in the province due to the war. The population belongs to the Maconde and Macua tribes, the latter being the majority group, and almost exclusively of Muslim faith. The rural study site was chosen since few valid data are available in the northern part of Mozambique. It borders southern Tanzania, southern Malawi, southern Zambia, and northern Zimbabwe. All these areas are known to be highly affected by HIV infection. The peace treaty signed in Mozambique in 1993 was expected to lead to the gradual return of Mozambican refugees from these neighbouring areas for resettlement in their areas of origin in northern Mozambique.

Study population

There were three inclusion criteria:

- infertility reported as the main subjective problem;
- at least one year of residence in current household;
- no pregnancy during the last two years in spite of reported regular sexual activity.

A reference group of 200 proven fertile women (referents) were enrolled. They were randomly selected from the antenatal clinic during early pregnancy, and came from the same rural area as the cases. For each infertile woman, two referent women, matched for age, parity, and area of residence were enrolled. Logistically,

there was no other way to recruit 'fertile' women at the community level, since there was no way to ethically justify the study of STDs utilising invasive techniques except at outpatient and antenatal clinics in the area. There were two inclusion criteria of the referents:

- ongoing pregnancy; and
- no prior problem of infertility.

All cases and referents were interviewed regarding current marital status and total number of lifetime spouses. Ethnicity and religion were noted. Blood samples were obtained from each woman in order to elucidate her health status. Informed consent was obtained to screen for syphilis, HIV-1 and HIV-2 antibodies (IgG). Ethical clearance for this study was obtained from the Ethics Committee of the Central Hospital in Maputo.

The statistical comparison between cases and referents was carried out using the modified

approach for matched groups according to Schlesselman.⁷ Odds ratios (OR) with 95 per cent confidence interval (CI) were calculated using *EPI-Info* software, version 6.2, from the Center for Disease Control, Atlanta, Ga., USA.

Results

The findings for cases and referents have been summarised in Table 1. Among infertile women, 55 per cent were TPHA-positive as against 18.5 per cent among referents (OR 4.7; 95% CI 3.0-7.4). The distribution of TPHA-positive women became clearer when related to the number of lifetime spouses. Of infertile women with ≥ 2 lifetime spouses, 64.6 per cent were TPHA-positive. The corresponding figure among fertile women with similar marital status was only one-third of this (OR 7.1; 95% CI 3.6-14.1).

Table 1: Infertile women (cases) and fertile women (referents) with number of lifetime spouses, syphilis seropositivity and HIV seropositivity. Odds ratio (OR) with 95 per cent confidence intervals (CI) are presented

Parameter	Cases (n=100)	Referents (n=200)	OR	95% CI
Spouses ≥ 2	65	94	2.1	1.3 - 3.4
TPHA positivity	55	37	4.7	3.0 - 7.4
TPHA pos & spouses ≥ 2	42	21	7.1	3.6 - 14.1
HIV-1 antibodies	3	0		
HIV-2 antibodies	0	1		

Ethnicity was not significantly associated with syphilis seropositivity. Among Macua infertile women, 47/84 were TPHA positive, while among the remaining ethnic groups (Maconde, Jana, and Muani) 8/16 infertile women were TPHA-positive (OR 1.27; 95 % CI 0.44-3.70). A similar non-significant association was shown among fertile women regarding ethnicity and syphilis seropositivity. Among Macua referent women, 31/168 were TPHA positive, whilst among the remaining ethnic origins (Maconde,

Jana, and Muani) 6/32 were TPHA positive (OR 0.98; 95 % CI 0.37-2.59).

The predominant religious faiths in the area — Catholic and Muslim — neither showed any association with TPHA positivity among case women nor among referent women.

HIV-1 seropositivity was encountered in three infertile women but not in any fertile woman. Of all 300 women studied, only one woman, fertile, had HIV-2 antibodies.

Discussion

The main finding in this study was that 65 per cent of infertile women with ≥ 2 lifetime spouses were syphilis seropositive. This confirms the hypothesis that these women are at an extremely high risk of acquiring syphilis, presumably through unprotected sexual intercourse with several male partners. An alternative interpretation may be that infertile women may have acquired gonorrhoea and syphilis concomitantly. The gonorrhoea infection might have developed into a tubal factor infertility, by which syphilis seropositivity is rather a marker for exposure to STD, ultimately leading to infertility.

In the area studied, the HIV-1 and HIV-2 seropositivity were found to be low. Among the 300 women studied, only three (1 %) were HIV-1 positive (all of them cases), and one (a referent woman) was HIV-2 positive. It can, therefore, not be stated that infertile women at present constitute a risk group for HIV-1 and HIV-2 transmission. However, with the overall prevalence of 55 per cent syphilis seropositivity among infertile women, it can be assumed that HIV infection, once introduced in this society, may, like syphilis, reach high prevalence rates.

In areas where childlessness is common, high prevalence of various STDs have been reported.² In the setting studied, the markedly elevated prevalence figures of syphilis seropositivity among infertile women may express either a lifestyle-associated increased risk of the acquisition of STDs (with ensuing risk of infertility), or a consequence of infertility with multiple exposures to unprotected sexual intercourse with multiple partners in order to achieve a much desired pregnancy, or both of these mechanisms in combination.

In an anthropological study in the same area in northern Mozambique,⁸ it was observed that almost all infertile women interviewed 'committed adultery' with the hope of conceiving. The high prevalence of syphilis seropositivity in the infertile population in the setting studied indicates that HIV infection, once introduced in the

same community, may develop at an alarming rate. In a parallel study in western Tanzania, a similar pattern has been observed.⁹ It was found that infertile women had suffered more marital breakdowns, more lifetime sexual partners, and higher levels of exposure to sexually transmitted diseases. In the area studied in Tanzania (Mwanza), the overall HIV seropositivity is higher than in northern Mozambique and the HIV prevalence was remarkably higher among infertile (18.2 %) than fertile women (6.6 %). In the Mozambican setting, this pattern could not yet be verified, but it would seem probable that a Mwanza-like pattern may occur also in Montepuez District.

The operational implications of our findings are that women suffering from infertility should be considered, firstly, as an important group of often desperate patients with reproductive ill-health deserving more attention and care in their own right; and, secondly, an important potential category who can transmit both curable and non-curable STDs.

To conclude, infertile women may be at a higher risk of HIV, and constitute an important reservoir of HIV infection. The public health problem of childlessness should, therefore, be addressed more vigorously in its own right and also in order to prevent HIV.

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