

## FERTILITY IN HIV-INFECTED PERSONS

Thanks to HAART, individuals infected with HIV enjoy an almost normal life expectancy [1] and many may wish to conceive a biological child [2]. In these individuals reproductive counselling and assistance aim to reduce both sexual and vertical transmission and to overcome infertility issues [3,4].

### Seroconcordance or discordance within couples

Couples with HIV can be concordant for their HIV status. Alternatively, serodiscordant couples can be formed by an HIV-positive man and an HIV-negative woman or vice versa. Each of the above settings presents different prevention issues and requires specific reproductive counselling and care.

In many countries there are still obstacles to providing reproductive technologies to HIV-positive individuals in case of infertility. The major ethical obstacle is that pregnancy, which would have not taken place without medical intervention, can result in the birth of an infant infected with HIV or at risk of being

orphaned because of HIV. However, leading professional organisations, including the American Society for Reproductive Medicine [5], the American College of Obstetricians and Gynecologists [6], and more recently the WHO [7], have issued guidelines fostering the right of all persons living with HIV to access reproductive health services.

Reproductive counselling for individuals with HIV may motivate them to seek reproductive care in order to limit the risk of infection for uninfected partners or the unborn child and to reduce the risk of toxicity for the fetus and the mother.

### HIV discordant couples: seropositive man

The risk of sexual transmission of HIV to the uninfected woman can be minimised when semen from HIV positive men is processed and used for intrauterine insemination or *in vitro* fertilisation [8].

Sperm washing is a three-step procedure combining migration against gradient, repeated washing of the cell pellet and a spontaneous migration phase [9]. Sperm

washing was devised 20 years ago in Milan, Italy [10] and so far, over 5000 treatment cycles have been performed and there has been no evidence of transmission to the uninfected woman [8,11]. Pregnancy and live birth rates in these couples were similar to those observed in the treatment of infertile HIV-seronegative couples.

Whether semen washing should be followed by intrauterine insemination or by *in vitro* fertilisation techniques (IVF-ET) should depend on the fertility profile of the couple. Screening for genital tract infections, semen and egg quality, and tubal patency should be conducted before treatment to select the appropriate reproductive technology and reduce the number of cycles necessary to achieve pregnancy. Approximately 10% of men in the general population are subfertile but the frequency of infertility may be higher in HIV-positive men. Men who acquired HIV through IV drug use may exhibit a higher prevalence of genital tract infections, and HAART might impact on seminal motility, probably as a

consequence of the mitochondrial toxicity of antiretroviral agents.

Recently, the value of sperm washing as a risk-reduction method in fully aviraemic men treated with HAART has been debated [12,13] without reaching consensus. The reassuring reports of lack of HIV transmission in couples practising unprotected intercourse where the man's viral load is low [14,15] are contrasted by observations of intermittent presence of elevated HIV viral loads in the semen of aviraemic men [16].

### HIV discordant couples: seropositive woman

Nowadays women account for an increasing proportion of reported AIDS cases in Europe. In 1985 women accounted for only 11% of adult AIDS cases, whereas in 2003 the proportion had increased to 28% [17], and the large majority of cases are women of reproductive age. Targeted antiretroviral treatment for HIV infection and antenatal care for HIV-infected pregnant women have improved, leading to a marked reduction in HIV-related mortality and morbidity on one hand and in the risk of vertical transmission on the other. The latter can be downsized to approximately 1% by reducing maternal viral load, elective caesarean section and avoidance of breast-feeding.

In couples where only the woman is infected with HIV, self insemination with the partner's semen eliminates the risk of sexual transmission of HIV to the man. A basal spermogram may be indicated to evaluate semen quality and rule out the presence of genital infections, while complete infertility screening should be offered if pregnancy does not occur

within 6 months of the first attempt [18].

When both partners are infected with HIV, and habitually refrain from unprotected intercourse, semen washing can be offered to limit the risk of transmission of resistant virus.

Early studies in HIV-infected women indicated decreased pregnancy rates [19] and a higher frequency of menstrual disturbances associated with low CD4 cell counts [20] and upper genital tract infections [21]. Also in the era of HAART, higher rates of subfertility have been shown and correlate significantly with tubal infertility [22] probably due to increased severity of pelvic inflammatory disease (PID) [23] and high rates of PID from genital tract commensals rather than demonstrated sexually transmitted infections [24,25].

The application of assisted reproduction techniques to women with HIV has yielded lower pregnancy and live birth rates. The observed reduced response to superovulation points towards an effect of HIV or antiretroviral medication on ovarian response and ovarian reserve rather than endometrial receptivity [26,27].

In conclusion, individuals with HIV live longer and healthier lives and it is no longer ethical to limit their access to reproductive health services on the basis of HIV status alone. Reproductive counselling and care can nowadays offer valid treatment options to all couples affected by HIV, reducing the rates of HIV transmission and counteracting infertility.

### References

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