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HIV couples' anxiety and risk taking during ART

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Abstract

Anxiety and the willingness to undergo ART was assessed by the State-Trait Anxiety Inventory and by trade-off at increasing hypothetical HIV-1 transmission risks in fifty serodiscordant couples undergoing intrauterine inseminations as a risk-reduction strategy. Both men and women displayed high state anxiety levels, but despite their anxiety, women were prepared to take high risks to fulfill their desire for a child.

Until a few years ago, men and women infected with HIV-1 were discouraged from having children, because of their limited life expectancy, the risk of sexual transmission of HIV-1 to the partner, and the risk of vertical transmission of HIV-1 to the offspring. Nowadays, the course of HIV-1 infection has shifted from a lethal to a chronic disease. As a result, many couples with an HIV-1-infected partner consider having children, as do other couples of reproductive age with chronic illnesses [1,2].

To reduce the risk of HIV-1 transmission in serodiscordant couples with an HIV-1-positive man, Semprini et al. started with intra uterine insemination (IUI) with processed semen in the early 1990s [3]. Since then, more than 3,000 treatments have been performed, mainly in Europe, leading to the birth of more than 500 children. Transmission of HIV to women by the inseminations has never been reported [3-14].

Although these data are reassuring, no data exist on the possible anxiety these couples may experience about getting infected by this technique. In addition, no data exist on the HIV transmission risks these couples are willing to take in an assisted reproductive technology (ART) program designed to reduce transmission risks. The aim of the present study was to explore anxiety for HIV-1 transmission in serodiscordant couples with an HIV-1-infected man and to assess the magnitude of transmission risk these couples are willing to accept by systematically varying hypothetical HIV-1 transmission rates.

Between March 2003 and July 2006, 50 consecutive serodiscordant couples with an HIV-1-infected man were enrolled in the IUI program of the Center for Reproductive Medicine of the Academic Medical Center in Amsterdam, The Netherlands. All couples desired to conceive and requested ART to avoid HIV-1 transmission.

During the first visit a medical history was completed by a physician. The medical history covered demographic, reproductive and HIV-1 data. In addition, standard patient information on IUI for HIV-1-infected patients was handed out, and all patients had to give written informed consent after reading the text closely. In the standard patient information, it was explicitly stated that the risk of HIV-1 transmission to the woman and vertical transmission of HIV by IUI after semen processing is practically nil, because worldwide no seroconversions of women and their children have been described. Patients were also informed that the lower detection limit of the polymerase chain reaction (Cobas Amplicor HIV-1 Monitor ultrasensitive test, Roche, Basel, Switzerland) used for HIV testing of the processed sperm was not nil. Detection of very low levels of HIV-1 RNA was therefore not guaranteed.

After the initial visit, anxiety was measured by the State-Trait Anxiety Inventory (STAI) [15]. We evaluated the normality of the data with the Kolmogorov-Smirnov test. The data passed the normality test. The outcomes were then compared with reference values by one-sample *t* testing. Reference values for the normal population were state anxiety scores below 38 and trait anxiety scores below 39 [15].

The couple's acceptance of risks during ART with processed semen was explored by trade-off. A hypothetical transmission risk of HIV-1 to the woman was systematically increased from 0.5% to 3%. For each patient, we sought to obtain the transmission risk at which they would switch from "choose ART" to an "unacceptable HIV transmission risk by ART," i.e., the cessation threshold. Transmission risks in the trade-off were visualized by crowd figures, showing 0.5, 1, 2 and 3 affected people in a total of 100 people [16]. A Kaplan-Meier survival analysis was performed to calculate cessation thresholds, a long rank test was performed to calculate differences in cessation thresholds between men and women.

Statistical significance was set at a two-sided level of $P<.05$. The study was approved by the Institutional Review Board of the Academic Medical Center.

Median age was 32 years for the women (interquartile range [IQR] 30–36) and 38 years for the men (IQR 35–41). Most patients were from European origin, and North Africans were the second largest group. Most women were employed (86%) and nulliparous (78%). The median duration of the relationship was 5.0 years (IQR 2.8–9.6) and the median duration of desire to conceive was 2.3 years (IQR 1.4–3.6). Only three couples had practiced unprotected intercourse in the past (6%).

All HIV-1-infected men were in good clinical health during ART. Median CD4 counts were 400 cells/mm3 (IQR 300–530), and median blood plasma HIV-1 RNA concentration was 50 copies/mL (IQR 50–326). The mean time since the first positive HIV-1 test was 5.8 years (IQR 2.4–9.0). Thirty-two men (64%) acquired HIV-1 by heterosexual contact, 11 men (22%) by homosexual contact, three men (6%) by IV drug use, and two men (4%) after receiving blood products; in one man (2%) the route of acquisition was unknown. Thirty-nine men (78%) were using antiretroviral therapy; 11 men (22%) were not because of sufficient CD4 cells.

Thirty-four men and 36 women of the initial 50 couples (70%) filled out the STAI after their first visit. The main reason for not participating was a language barrier.

State anxiety, reflecting existent anxiety, was significantly increased in both men and women compared with the reference value for the normal population ($P<.001$) [15]. Median state anxiety scores were 46.0 (IQR 44.8–48.0) and 45.0 (IQR 44.0–47.0) for men and women, respectively (Fig. 1A). Trait anxiety, reflecting background anxiety, was in the normal range for both men and women compared with the reference value for the normal population [15], median 34.5 (IQR 25.8–40.3) and 31.0 (IQR 26.0–35.8), respectively (Fig. 1A).

Trade-offs did not differ significantly between men and women ($P=.58$; Fig. 1B). A 0.5% HIV-1 transmission rate was considered too high by 16% of women and 21% of men. An HIV-1 transmission rate of 1% was acceptable to 50% of couples. In approximately 50% of couples, the initial willingness to undergo treatment changed into a decline when the HIV-1 transmission risk increased above 1%. Still, a 3% HIV-1 transmission rate was accepted by 32% of men and 37% of women.

The data presented here show that although the risk of HIV-1 transmission to the woman is reduced to almost nil by IUI with processed semen [3-14], the fear for HIV-1 transmission among these couples is not proportionally reduced, and anxiety is still present among these couples.

Trade-offs did not differ significantly between men and women, although women tended to take a larger risk. Being able to procreate seems to be of existential importance to these women, consistent with findings in trade-off studies in subfertile couples [17,18]. A remarkable finding is that almost 30% of couples accepted the costs and burden of ART at HIV-1 transmission rates of 3%, which is nearly equal to the risk of unprotected intercourse [19].

In contrast, 20% of couples considered a 0.5% risk too high, despite the fact that patients were informed beforehand that detection of very low levels of HIV-1 RNA was not guaranteed. These couples in fact accept the treatment, but apparently with great apprehension. In general, risk assessment by patients is primarily determined by emotions and not by facts; physicians should be aware of this ambiguity in their counseling [20].

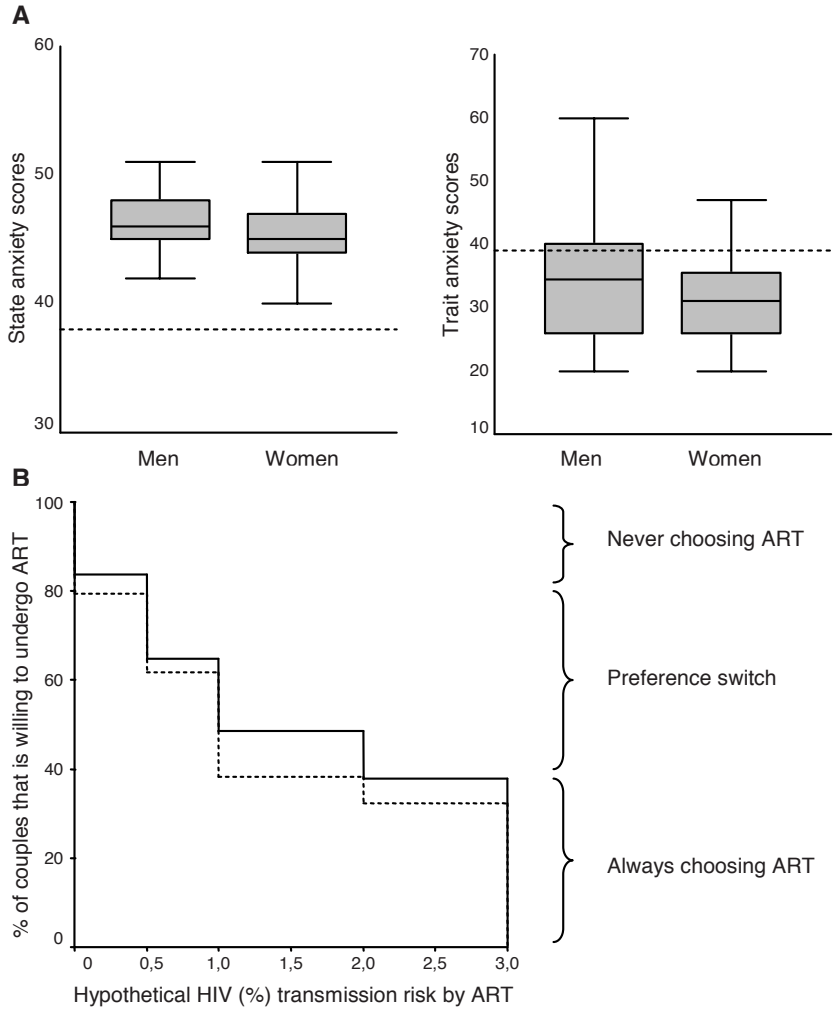

Figure 1. (A) State and trait anxiety scores in serodiscordant couples before start of ART. Scores are displayed as median, interquartile range, and the range that contains the central 95% of the observations. The *dotted lines* indicate the reference value for the normal population (one-sample *t* test). (B) Acceptance of ART at hypothetical transmission risks by ART. Women are represented by the *solid line*, men by the *dotted line* (Kaplan-Meier survival analysis combined with log rank testing).

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