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SHORT COMMUNICATION

CAMBRIDGE, UK

Viral Screening and Assisted Conception Treatment—The Bourn Hall Experience

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INTRODUCTION

Twelve years have elapsed since Bourn Hall Clinic introduced a policy whereby all new and existing patients undergoing assisted conception treatment, with or without donated gametes, should be tested for both human immunodeficiency virus (HIV) and hepatitis B virus (HBV). Testing for hepatitis C virus (HCV) was also introduced in 1996. We write to report the seroprevalence of the HIV, HBV, and HCV in couples receiving infertility treatment to contribute to the discussion on whether such a policy should be encouraged or made compulsory in all assisted reproductive technology (ART) clinics.

MATERIALS AND METHODS

Between 1987 and 1998, 4960 patients consented to be tested for HIV, 4721 patients for hepatitis B, and 1658 patients for hepatitis C. The serum samples were pooled daily and assayed in our institution for HIV, HBV, and HCV. All patients were counseled regarding these screening tests by a senior medical staff.

The diagnoses of seropositivity were based on virus antibody screening with the enzyme-linked immunosorbent assay (ELISA) (Abbott Laboratories, Abbott Park, IL) and confirmed by recombinant immunoblot assay. Two lots of sera were disregarded on patient's request.

RESULTS

Three patients (0.06%) were confirmed to be positive for HIV, 24 (0.5%) for hepatitis B surface antigen, and 9 (0.54%) for hepatitis C antigen. None of these patients was positive for two viruses. All patients had been previously unaware of their seropositive status and none had symptoms or signs suggestive of infection.

DISCUSSION

The welfare of the child clause in the Human Fertilization and Embryology Act 1990 (1) states that the welfare of the child should be carefully considered before undertaking treatment by ART. The FIGO Committee for the Study of Ethical Aspects of Human Reproduction recently published guidelines entitled "AIDS and Human Reproduction" (2) stating that "to protect the interest of those at risk of unwanted exposure to HIV including the potential child, only seronegative individuals should be allowed to participate." Despite recent advances in obstetric care the vertical transmission rate of HIV in the Western World is still 14.4% (3). There is at present no method to diagnose fetal infection antenatally (4). The prognosis for an HIV infected neonate is uncertain; 17% of infected babies become ill and die before 1 year of age (5). There is also the possibility of premature death of one or both parents from HIV-related pathology. For hepatitis B, the vertical transmission rate in the absence of treatment with immunoglobulins or immunization is about 95% and, even with their use, remains in the region of 5% (6). The exact risk of mother-to-child transmission of hepatitis C has not yet been quantified and the factors influencing the risk of this transmission remain to be

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evaluated (7). We must also consider that performing ART to a patient with HIV or hepatitis B or C infection increases the risk of contamination of other gametes and embryos in the incubator and increases the risk to technicians who manipulate the contaminated biological fluids in a standard IVF laboratory (8–10).

The incidence of infertility among HIV-infected women in the United Kingdom is unknown. There is some indication that spermatogenesis may be impaired in HIV-infected males (11). Four-fifths of HIV-seropositive women are women of reproductive age (12), and inevitably some of them will plan to have infertility treatment not knowing they are seropositive. The importance of HIV screening was highlighted by the work reported by Semprini (13). He carried out >1000 artificial insemination cycles with washed semen in serodiscordant couples (a seropositive man and a seronegative woman). Two hundred fifty babies had been born, but in no case had the inseminated women or their babies been infected. On the same notion, Marina *et al.* (14) reported the first pregnancy achieved in a seronegative woman following in vitro fecundation through intracytoplasmic sperm injection (ICSI) from an HIV-positive man. If all units were to adopt our screening policy, infected individuals would be identified and receive appropriate fertility and support counseling. Should they decide to proceed with treatment, they could then do so in specialist units with a multidisciplinary approach, which would minimize the risk of transmiting of infection to the child (15). Screening will prevent more cases of pediatric AIDS and prevent more cases of HBV- and HCV-infected babies.

Patrick *et al.* (16) assessed the cost effectiveness of HIV screening in a low-prevalence setting and concluded that screening may rival other widely accepted health care expenditures in terms of cost effectiveness. The Health Economics Research Group (17) in the United Kingdom estimated that the lifetime costs of caring for an HIV-infected child ranged from 46,427 to 119,502 £ sterling, and this could increase if the natural history was complicated. Not knowing one's serostatus precludes medical intervention and may increase vertical transmission (18). Although our experience of screening over the past 12 years has yielded a low seropositivity rate, we believe that viral screening is justified and helps patients to make an informed choice particularly, since we are dealing with life-shortening diseases. The explanation for the low prevalence at our clinic may be based on the fact that Bourn Hall is a private unit that serves a low-risk group. Furthermore, patients who are known to be seropositive, or who fear they may be at risk of being positive, may be inclined to seek treatment at centers which do not have such a policy. It is noteworthy that only 17% of the patients who attended Bourn Hall Clinic during the study period were overseas referrals.

We conclude that all infertile couples starting ART should be screened for HIV and hepatitis B and C infection to protect themselves, any resulting offspring, other patients, and the clinic staff. Whether all assisted conception units should consider adopting a similar screening policy should be debated fully.

REFERENCES

1. HFEA: Human Fertilization and Embryology Authority Code of Practice. London, HFEA, 1991
2. Schenker JG: FIGO Committee for the Study of the Ethical Aspects of Human Reproduction. Hum Reprod 1997;12:1619
3. European Collaborative Study: Risk factors for mother-to-child transmission of HIV1. Lancet 1992;339:1007–1012
4. Johnstone FD: Management of pregnancy in women with HIV infection. Br J Hosp Med 1992;48:664–665
5. European Collaborative Study: Children born to women with HIV1. Lancet 1991;337:253–263
6. Johnson M: Letting prejudice take over. Prog Reprod 1997;1: 6–8
7. Gillett P, Hallam N, Mok J: Vertical transmission of hepatitis C virus infection. Scand J Infect Dis 1996;28:549–552
8. Case-control study of HIV seroconversion in health-care workers after percutaneous exposure to HIV-infected blood—France, United Kingdom and United States, January 1998–August 1994. Morbid Mortal Week Rep 1995;41: 823–825
9. Kiyosawa K, Sodeyama T, Tanaka E: Hepatitis C in hospital employees with needlestick injuries. Ann Intern Med 1991;115:367–369
10. McKee T, Avery S, Majid A, Brinsden P: Risk for transmission of hepatitis C virus during artificial insemination. Fertil Steril 1996;66:161–163
11. Dondero F, Rossi T, D'Offizi G, Mazzilli F, Rosso R, Sarandrea N, Pinter E, Aiuti F: Semen analysis in HIV seropositive men and in subjects at high risk of HIV infection. Hum Reprod 1996;11:765–768
12. Norman SG, Studd J, Johnson M: HIV infection in women. Br Med J 1990;301:1231–1232
13. Semprini A: Reproductive counseling for HIV-discordant couples. Lancet 1997;349:1401–1402
14. Marina S, Marina F, Alcolea R, Nadal J, Exposito R, Huguet J: Pregnancy following intracytoplasmic sperm injection from an HIV-seropositive man. Hum Reprod 1998;13:3247–3249

15. Categorization of Biological Agents According to Hazard and Categories of Containment, 4th ed. HSE Books, 1995, pp 36–40
16. Patrick DM, Money DM, Forbes J, Dobson SR, Rekart ML, Cook DA, Midelton PJ, Burdge DR: Routine prenatal screening for HIV in a law-prevalence setting. CMJA 1998;159:942–947
17. Sculpher MJ, Gibb D, Ades AE, Ratcliff J, Duong T: Modelling the costs of paediatric HIV infection and AIDS: Comparison of infected children born to screened and unscreened mothers. AIDS 1998;12:1371–1380
18. Worley PM, Chu SY, Diaz T, Ward JW, Doyle B, Davidson AJ, Checko PJ, Herr M, Conti L, Fan SA: HIV testing pattern: Where, why and when were persons of AIDS tested for HIV? AIDS 1995;9:487–492

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