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Short communication

A survey of anti-sperm antibodies in infertile couples

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Abstract

The presence of anti-sperm antibodies (ASA) in semen or serum may impair sperm function leading to immunological infertility. The aim of this study was to investigate the presence of ASA on the surface of sperm and in circulating blood of infertile couples. In this cross sectional study, we studied 49 couples suffering from infertility for at least one year. Serum ASA (IgG and IgA classes) was examined by indirect SpermMAR test. Also, ASA (IgG and IgA classes) attached to the surface of spermatozoa were tested by direct SpermMAR method in ejaculates from infertile men. ASA were positive in 8% of semen samples (2% IgG, 4% IgA, 2% both IgG and IgA classes). Only in one woman, ASA of the IgG class was found in serum samples. The presence of ASA may impair fertilizing ability and is a serious factor which may prevent the success of various fertilization techniques. ASA assessment should be considered as an essential part of infertility management.

Key words: *Anti-sperm antibodies, Infertile Couples, Sperm MAR test*

Introduction

An adverse immune response to certain tissues of the reproductive system can cause infertility. The presence of anti-sperm antibodies (ASA) is a cause of infertility in men and women. Antibodies against sperm can prevent their motility through the female reproductive tract or prevent the process of fertilization (1). It has been shown that both males and females can make antibodies that react with human sperm. In males, for example, ASA can be detected in seminal plasma and serum, and are also located on the surface of sperm, which cannot be detected in a routine semen analysis. The female may produce ASA, which may be found in circulating blood, or produced in the cervical mucus (2). ASA have usually been found in homosexual males and in cases of testicular trauma, varicocle mumps or orchids, spinal cord injury, congenital absence of the vas and vasectomy (3). The objective of this study was to investigate the presence of ASA on the surface of sperm and in circulating blood of infertile couples.

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Materials and methods

This research was carried out as a cross- sectional study. We studied 49 couples suffering from infertility for at least one year who referred to Yazd Research and Clinical Center for Infertility. Including criteria for men was normal sperm analysis and for women was no anatomical or endocrine problems. Peripheral blood (5ml) was collected from women and the presence of ASA (IgG and IgA classes) was examined by indirect SpermMAR test (SpermMAR kit, Beernem, Belgium). Also, ASA (IgG and IgA classes) attached to the surface of spermatozoa were tested by direct SpermMAR method in ejaculates from infertile men.

Results

The mean age of males was 32.2±5.2 years (Mean±SD) and for females, it was 28.6±5 years. Also, duration of infertility was 5.1± 3.4 years. ASA were positive in 8% of men semen samples (2% IgG, 4% IgA, 2% both IgG and IgA classes). Only in one woman ASA of the IgG class was found in serum sample.

Discussion

In this study, we found ASA coated on the spermatozoa were positive in 4 (8%) of infertile men. Data on the frequency of ASA coated on the spermatozoa of infertile men have shown high variability (from 7% to 44%), depending on the method applied (4-7). In addition, one infertile woman (2%) was positive for ASA in serum. Other researchers reported the frequency of circulating ASA from 1.3% to 7.3% in serum of infertile women (7-9). ASA can cause acrosome reaction abnormalities, inhibition of sperm-zona pellucida binding and prevention of embryo cleavage and its early development (10).

Several techniques attempt to combat the potentially deleterious effects of ASA-mediated infertility. The most common treatments are based on corticosteroids with various dosages and administration methods. Lombardo *et al* (2001) found that corticosteroid therapy does not significantly reduce the titer and binding percentage (11). Many techniques have been used to treat male immune infertility and obtain antibody-free sperm, e.g. sperm washing, swim up, immunoadsorption and immunocompetition. Using strict laboratory criteria to evaluate the immunological value of such reductions in the percentage of bound sperm after in vitro manipulation, none of the protocols tested was capable of decreasing detectable sperm surface ASA positivity. Nagy et al (1995) reported the first results of ICSI treatment in couples whose infertility was due to high ASA levels in semen (12). Microinjection of sperm into the oocyte cytoplasm is likely to increase the fertilization rate to a similar or even significantly higher level than that seen in other indications. In a retrospective analysis of a total of 558 ICSI cycles in 37 patients with high ASA-bound sperm levels, no difference in pregnancy rates (30%) was seen between ASA-positive and negative groups (13).

Conclusions

The presence of ASA may impair sperm fertilizing ability and is a serious factor which may prevent the success of various fertilization techniques. ASA assessment should be considered as an essential part of infertility managment. Only ICSI seems able to overcome the problem.

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