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Measurement of antisperm antibodies (ASA) type IgG in Iraqi infertile male

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Abstract

The presence of antisperm antibodies in serum may impair sperm function leading to immunological infertility. The objective of the study was to investigate the prevalence of serum ASA type IgG in male patients at various age (28-42yr.), this study was presented on 36 infertile male to detect the presence of ASA IgG their serum were cause of immunological infertility. Patients were obtained from Institute of Embryo Researches and Infertility Treatment at Al-Nahrain University in between 2012-2013. Serum antisperm antibodies were determined by DRG sperm antibodies elisa kit. Quantitative determination of anti sperm antibodies in human serum was done and values between0-60U/ml as a negative and above 60U/ml considered as a positive. The similar procedure was done on 10 fertile male as control, the percentage incidence of ASA in infertile male 52.9±10.73 in 12 cases (33.3) %was statically significant compared with the control group 29.3±4.42. In conclusion a significant of level in ASA IgG was found in infertile males and its associated with the pathogenesis of their infertility.

Keywords: Male infertility, IgG, Immunological factor, Antispermantibody, Elisa technique.

Introduction

Immunologic factors are considered as an important cause infertility (Lu *et al*., 2008). One of the immunologic factors pro-posed for infertility is presence of antisperm antibodies in serum (Karimi *et al*., 2008). Immunity to sperm can cause infertility; humoral antibodies directed against sperm did not necessarily impair fertility unless the circulating antibodies are also present within the reproductive tract and on the living sperm surface (Bronson *et al*., 1984). Males and females can make antibodies that react with human sperm, in males it is found in seminal plasma, serum and on the surface of sperm, which cannot be detected in a routine semen analysis (Hossein *et al*., 2007). Three type of antisperm antibody have been described immunoglobulin IgG, IgA and IgM isotype, the most common IgG, IgA and the third IgM is mainly related to infections, This immunoglobulin can be found in both males and females (Jones *et al*., 1994).

The incidence of sperm autoimmunity in infertile couples is 9-36% in contrast to 0.9-4% in the fertile population, other study describes that the incidence of sperm antibody higher in infertile males (8-21%) compare to fertile subjects (1-4%) (Collins *et al*., 1993). Immunological causes may contribute to 5-15% of the male infertility factor. Anti-sperm antibodies are present in less than 2% of fertile and 10% of infertile men (De Almeida *et al.,* 1986; Heidenreich *et al*., 1994). Anti-sperm antibodies affect sperm function differently by impairment of sperm penetration into cervical mucus, inhibition of sperm capacitation, incomplete acrosomal reaction, disruption of sperm-egg binding, and disorder in egg fertilization (Sinisi *et al*., 1993). The testes normally contain a natural barrier; this barrier acts as protective layer that prevents immune cells from being able to access sperm within male reproductive tract (Bronson *et al*., 1984).

Antisperm antibodies also found in homosexual males and in cases of testicular trauma, varicocele, mumps orchids, spinal cord injury, congenital absence of the vas and vasectomy (Hossein *et al*., 2007).

The aim of this study to find out the incidence of sperm antibodies IGg in infertile Iraqi males.

Materials and Methods

Various methods are available for assessment of immunity to sperm: sperm micro agglutination test, sperm immobilization test, gelatin agglutination test, sperm cervical mucus contact test, immunofluorescence test, PCT, sperm cervical mucus penetration test, and newer methods like ELISA and indirect radio immunoassay. ELISA has provided a relatively simple, reliable, and highly reproducible method for detection of ASA.

In the present study we have taken 36 infertile males aged between 28-24yr. attending the

infertility (Institute of Embryo Researches and Infertility Treatment at Al-Nahrain University) in between the year 2012 to 2013 after recording the history of past and present illness and clinical examination. The same criteria were followed with 10 fertile males. 5 ml blood was collected from infertile males and the presence of sperm Antibodies (IgG classe) were estimated in the serum by using (DRG sperm ELISA kit), (Enzyme linked immunosorbent assay is a reliable and quantitative test for determination of antibodies directed against human spermatozoa. This test was solid-phase sandwich enzyme immunoassay (Khan *et al*., 2012).

Normal value: < 60U/ml
Elevated value above 60U/ml
Equivocal value 60U/ml

Results and Discussion

In this study 36 cases of infertile male and 10 of fertile male, among the 36 infertile male cases 12 cases were positive for ASA and (33.3)% and 5 cases was equivocal (13.8%) out of 10 cases fertile male no one was revealed positive (0)% . A mean of antisperm antibody level in 36 infertile men was 52.9±10.73 and the control fertile men was 29.3±4.42, these results showed significantly increase of ASA in infertile male.

Table (1): ASA immunoassay (U/ml)

Immunological factor	Patients Mean ±SD	Control Mean ±SD
Anti sperm antibody	52.9±10.73	29.3±4.42

P value of the study≤ (0.05)

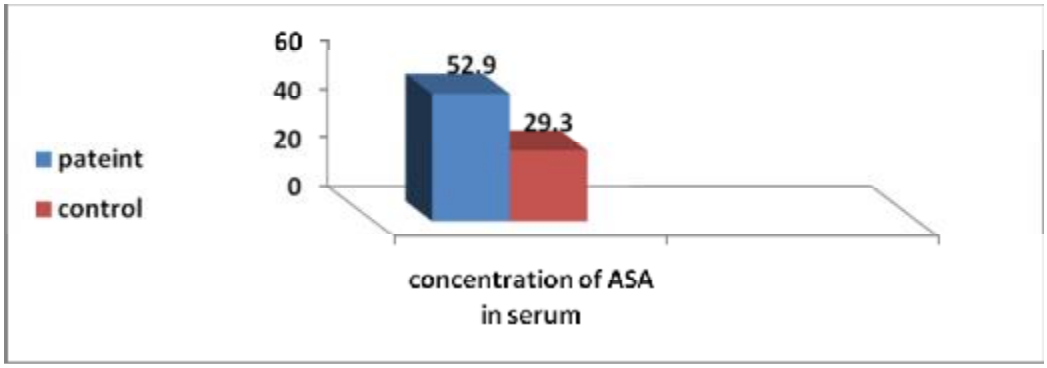

Figure (1): ASA immunoassay (U/ml)

The anti- sperm antibody (ASA) is one of the many immunological markers that consideration in evaluating immunological infertility (Kipersztok *et al*., 2003; Meinertz *et al*., 1992). The immunoglobulin found in the reproductive system and serum are diverse category (IgA, IgG, IgM etc.) (Peter *et al*., 1992; Shibahara *et al*., 2003). These immunoglobulin isotypes may transudate from circulation into reproductive tissue and, from the reproductive tissue back to the circulatory system. Some researchers pointed to the prevalence of ASA (Bronson *et al*., 1999; Isojima *et al*., 1984) and other researchers observed that the ASA is relatively high percentage in both fertile and infertile male and female. Male infertility and ASA are often related and generally accepted that ASA may contribute to decrease male fertility.

In this study we had taken 36 infertile male in which female partners were normal. Out of 36 infertile male 33.3% were having increasing ASA IGg level on the other hand no one fertile male have elevated value, and these results showed no effect on sperm quality, Khan *et al*. (2012) and Munuce *et al*. (2000) observed in their study there was no related between the presence of ASA and sperm quality but Fernando *et al*. (2003) revealed that antigens (ASA) are present on sperm surface and in seminal plasma in high parentage affects on semen parameters.

ASA may increase in some cases of patients who had history of prostate gland infection, varicocele, injury to the testical, torsion. Urry *et al*. (1994) demonstrated in infertility patients with history of cryptorchidism. Mastuda *et al*. (1993) demonstrated the elevated of ASA in men with vas deferens obstruction caused by childhood inguinal herniorrhaphy.

Maria-Khatoon *et al*. (2011) showed in here study no significant difference in the incidence of circulating antisperm antibodies among primary and

secondary infertility. Damianova *et al*. (1999) who found the highest incidence of sperm antibodies 31.4% amongst patients with primary unexplained infertility in subjects attending a programmed for assisted reproduction by various test (ELISA, TAT, SIT and GAT).on other hand Yi-chao *et al*. (2014) failed to demonstrate a significant incidence of ASA in the infertile men with OAT (Oligoasthenoteratoazoospermai). Autoimmunity to spermatozoa could compromise male fertility by interference with normal spermatogenesis and lead to reduction in the migratory potential of spermatozoa. The ability of spermatozoa to migrate through the mucus of the cervix is impaired by agglutinating antibodies and eliminated by immobilizing cytotoxic antibodies in semen. So the different study indicates that antisperm antibodies play one of the important roles in the causation of infertility by different ways.

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