

## **Prevalence of Antisperm Antibodies in Asthenospermic Infertile Male**

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### **Abstract**

Recently there has been a lot of discussion about the role that the immune system plays in infertility. The immune system generally works to protect the body from foreign cells and bacteria. Sometimes though problems within the immune system prevent it from working. Many couples facing infertility issues may actually have immune system dysfunction which is preventing them from conceiving .luckily new. tests are now available to pinpoint these immune factors in infertility properly.

prospective study was carried out in the infertility clinic of Azadi teaching hospital in Kirkuk city from January 2007 to January 2009.The study included 155 male with primary or secondary infertility with abnormal seminal fluid analysis specifically decreased motility of the sperms (asthenospermia), their ages ranged from(18-55)years. The entire patients included in the study have been proved to be infertile as they fail to conceive after a year of regular intercourse without contraception. All patients were subjected to a special questionnaire used for analytical purposes; both blood and the seminal fluid samples of all were examined for presence of antisperm antibodies.

the study showed that 75 patients (48.4%) out of 155 patients showed a positive antisperm antibody (ASA ) which is statistically significance (P value 0.04), 55 patients (73.3% ) from those with positive results showed ASA in their serum, while 20 patients (26.6%) of them showed ASA in their seminal fluids which showed is also statistically significance (P value 0.03)

in conclusion the study shows that an antisperm antibody has an impact on asthenospermia and infertility.

### **Introduction**

Recently there has been a lot of discussion about the role that the immune system plays in fertility. The immune system generally works to protect the body from foreign cells and bacteria (Rumke , 2008). Sometimes though problems within the immune system prevent it from working properly. Many couples facing infertility issues may actually have immune system dysfunction which is preventing them from conceiving .luckily new tests are now available to pinpoint these immune factors in infertility (Wilson ,1994).

Antisperm antibodies present in about 10% of infertile men, antisperm is antibodies can affect the chances of becoming pregnant by

interfering with the quality or function of the sperm (Menge AC *et al*, 2002) .

Normally the testes contain a natural barrier known as the blood-testes barrier, this barrier acts as a protective layer that tests and prevents immune cells from being able to access sperm within it to come into contact with the sperm. (Menge & Beitner, 1999).

Once the barrier is broken immune cells are able to detect the presence of sperm due to their unique antigen surface (Andolz *et al*, 1995), this triggers a response by the immune system to treat sperm as an "invader" and attack it, antibodies then attach themselves to different parts of the sperm and interfere with male fertility in a number of ways (Ayvaliotis *et al* , 1995) antibodies that are located on the tail of sperm can cause the sperm to become immobilized or clump together (Collins *et al*, 1993), when antibodies are found on the head of sperm they can prevent the sperm from being able to efficiently make its way through a woman's cervical mucus to the egg , however it is also possible for a woman to develop antisperm antibodies in her cervical mucus, which will serve to hinder attempts at conception even more (Jarow *et al*, 2002).

Three types of Antisperm antibodies have been described: Immunoglobulin G (Antisperm antibody) (IgG), immunoglobulin A (Antisperm antibody) (IgA), and immunoglobulin M (Antisperm Antibody) (IgM), each one of these is known as a specific immunoglobulin (Antisperm antibody) isotype. The most common are IgG and IgA , the third ( IgM ) is mainly related to infections but still has the ability to destroy sperm and to make them agglutinate (stick together ) (Sinisi *et al*, 2003 ) .

There are numerous reasons why the natural barrier between sperm and the immune system can be broken causing antisperm antibodies to form (Mohan *et al*, 2000) , some of these factors include:

Undescended testicles, twisting of the testicles, Injury to testicles Infections, testicular cancers, testicular biopsy, CAVD (congenital absence of vas defrense.

Additionally men who have undergone a vasectomy reversal are particularly prone to developing this fertility problem. Close to ٧٠ % of men who have had their vasectomy reversed will develop antisperm antibodies. (Heidenreich *et al*, 2004)

The indications for testing for the antisperm antibodies are Infertility and at least one of the followings; Identifiable risk factors, Abnormal semen analysis, especially: (Clumping/agglutination of sperm, Low motility (asthenospermia), Shaking-in-place motility, Poor sperm viability),<sub>2</sub> Abnormal postcoital test, including: (Low numbers of sperm in mucus, Poor motility, Shaking-in-place motility),<sub>2</sub> Abnormal in vitro cervical mucus penetration test,<sub>2</sub> Failed or low fertilization during in vitro

fertilization, Abnormal sperm penetration assay, and Unexplained infertility after male and female evaluation (Heidenreich *et al*, 1994), (Devine *et al*, 2003)

The antisperm antibodies can be detected by various methods (Bujas *et al*, 1998) like:- Immunobead test, Radiolabeled antiglobulin assay, Immunofluorescence, Sperm immobilization test, Enzyme–Linked immunosorbent assay (ELIZA), Agglutination tests, Mixed antiglobulin reaction (Bujas *et al*, 1998).

### **Patient and method**

This study was carried out in the infertility clinic of Azadi teaching hospital in Kirkuk city from January 2007 to January 2009. The study included 155 male with primary or secondary infertility with abnormal seminal fluid analysis specifically decreased motility of the sperms (Asthenospermia), their ages ranged from (18-55) years. The entire patients included in the study have been proved to be infertile as they fail to conceive after a year of regular intercourse without contraception. All patients were subjected to a special questionnaire used for analytical purposes. While the patients with normal sperm parameters varicocele, abnormal hormonal profile, Azospermia, and patients with chronic illness or on long term medications were excluded from the study.

10 ml of blood was taken and separated into serum, and plasma was separated from the seminal fluid of the same patient, both samples were investigated for the presence of Antisperm antibodies by using the ELIZA technique (Enzyme – Linked immunosorbent assay) which was a quantitative assay.

The cut off values for testing of Antisperm antibodies was (15U/ml), so positive result was recorded if the value of test was  $> 15$  U/ml. Equivocal values were recorded if the value of test was equal to 15 U/ml. Negative values were recorded if the value of test was  $< 15$  U/ml.

The results obtained from the study were subjected to statistical analysis to test the significance in means of different data.

Correlation analysis was done in SPSS 11.0 for windows 98. P values below 0.05 were accepted as statistically significance

### **Results**

The results obtained from the study showed that 155 patients were included in the study with primary and secondary infertility whose seminal fluid showed asthenospermia, 75 patient(48.4%) out of 155 patients showed a positive antisperm antibody (ASA) in their blood serums or seminal fluid plasma, while 80(51.6%) patients out of total 155 asthenospermic infertile male showed Negative ASA in their blood

serums and seminal fluid plasma with p value of 0.04 which is statically significance (Table 1), 55 patients (73.3%) out of 75 patients with positive results showed ASA in their serum ,while 20 patients( 26.6% ) of them showed ASA in their seminal fluids plasma with p value of ( 0.03 ) which is also statistically significance (Table 2)

### **Discussion:**

Immunoinfertility is an important problem involving a significant number of infertile couples.

Rumke (Rumke, 2008) and (Wilson, 1994) first reported the presence of antisperm antibodies in infertile men, this observation led to the potential for cause of infertility not conceived of prior to that time. Since those early reports significant amount of attention has been directed to the investigation of immunologic infertility.

Although there are isolated reports suggesting no relationship between the presence of antisperm antibodies and infertility (Collins *et al*, 1993), the majority of evidence is that sperm antibodies do prevent conception and there is evidence that the presence of antisperm antibodies on the male partner's sperm or female partner's serum is linked to higher rates of pregnancy loss. In approaching couples with infertility a higher index of suspicion for antibodies is necessary to avoid misdiagnosis.

In our study we found from a total of 155 infertile patients whose semen analyses showed asthenospermia, 75 patients (48.4%) showed positive antisperm antibodies with p value of 0.04, and from those 75 patients with positive results, 55 patients (73.3 %) showed antibodies in their serum while 20 patients (26.6%) showed antisperm antibodies in their seminal plasma with p value of 0.03. These results means that there is a significant correlation between the presence of antisperm antibodies and abnormal semen parameters especially asthenospermia and the presence of antisperm antibodies in the serum may have even greater importance. This means that antisperm antibodies has a direct impact on infertility.

### **Conclusions:**

Antisperm antibodies has an impact on asthenospermia and infertility, we recommend repeating this study on a higher sample numbers and in the optimal situation all semen analysis should be screened for sperm antibodies.

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**Table .1: (Total numbers of asthenospermic infertile patients their ages ranged from (18-55) years with Positive and Negative ASA)**

No. Total	+ve ASA in serum and seminal fluid	-ve ASA in serum and seminal fluid	P Value
155	75 (48.8%)	80(51.6%)	0.04

ASA= Antisperm Antibodies.

P value is statistically significance if it is < 0.05

**Table .2: (Patients with positive ASA in serum and seminal fluid)**

Total patients No. with +ve ASA	Patients No. with +ve ASA in Serum	Patients No. with +ve ASA in Seminal fluid	P Value
75	55(73.3%)	20(26.6%)	0.03

ASA= Antisperm Antibodies.

P value is statistically significance if it is < 0.05

## دور الأجسام المناعية المضادة للحيامن في عقم الرجال

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### الخلاصة

حدثت الأجسام المناعية ضد الحيامن في الرجال المصابين بالعقم مع بطئ حركة الحيامن لديهم. أجريت هذه الدراسة في عيادة العقم في مستشفى ازادى التعليمي في مدينة كركوك للفترة من كانون الثاني ٢٠٠٧- كانون الثاني ٢٠٠٩، شملت الدراسة ١٥٥ رجلا من الذين كانوا يعانون من عقم أولى أو ثانوي وكانت لديهم ضعف وقلة في حركة الحيامن أعمارهم يتراوح بين ١٨-٥٥ سنة، بعد إجراء الفحص السريري عليهم تم البحث عن وجود الأجسام المناعية للحيامن لديهم في كل من السائل المنوي و الدم وكانت النتائج إن ٧٥ رجلا (٤٨,٨%) من الذين كانوا يعانون من ضعف في حركة الحيامن ظهرت لديهم أجسام مناعية وان ٥٥ رجلا من ٧٥ (٧٣,٣%) منهم ظهرت الأجسام المناعية لديهم في الدم و ٢٠ منهم (٢٦,٦%) ظهرت الأجسام المناعية لديهم في السائل المنوي وهذه النتائج مهمة إحصائيا . أظهرت الدراسة أن للأجسام المناعية تأثير على حركة الحيامن وبالتالي على العقم لدى الرجال و توصى بإجراء التحري عن الأجسام المناعية في الظروف المثالية على كافة تحاليل السائل المنوي أما في حال تعذرها فيجب أن يجرى على الأقل على أولئك الرجال الذين لديهم احتمالية امتلاكهم للأجسام المناعية.