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**IMMUNOLOGIC MECANISM AT INFERTILITY**

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**Abstract**

*Infertility has been serious problem for couples that want to have a child. It is estimated that %10-15 of marriages are involuntary childless; that is, there is the serious problem of infertility. In more than 40% of infertility couples that is the reason of their infertility was unknown. In those couples, probably immunological factors were found to be responsible for the infertility.*

*In the article, it was aimed to review the immunologic causes of male and female infertility in the light of the current scientific data.*

Infertility is important problem to families demanding wishing own children. Infertility is defined that pregnancy not takes place in one year, generally, although contraceptive model is not used and wanted. Sterility is a situation occurring not pregnancy cause of insufficient intrinsic. Infertility is that pregnancy likely is little. Sub fertility is the same meaning as fertility (Aytekin et al 1995, Ekerbiçer 1999, Logoglu et al 1997, Martin 1994).

80 % of couples not using contraceptive become pregnancy in one year. Not pregnancy is major problem for 10-15 % of male and female. Pregnancy possibility is estimated for every month only 25-30 % frequent sexual intercourse implementing and healthy in young couples (Martin 1994). Data can be provided from countries where registration are complete registered the about frequent of infertility. There aren't certain statically results about this rate in the whole Turkey (Bertan & Güler 1995).

There are primary male factor in 30 % of infertile couple. 20-30 % of infertile cases have male factor with other factors, and female responsible 40-50 % of cases (Martin 1994).

Certain known factors in addition to other factors affecting have come to agenda in recently years. This factors the most important of which immunologic event is one. Immunologic reason estimated was showed for pregnancy not takes place in more 40 % of infertile couples not explained (Ekerbiçer & Dündar 1997).

One study was designed to estimate the incidence of infertility of immune origin in a group of 102 married couples with unexplained infertility, out of a total of 1346 couples being treated for infertility. The tests included micro agglutination of spermatozoa, micro zone sera

immunoelectrophoresis and sera immunodiffusion methods. In this group the sera of 23 (22.55%) women and 21 (20.58%) men contained antibodies, and these seemed to be the only cause of infertility. In relation to the total number of 1346 couples, infertility of immune origin was found in 1.70% of female and 1.56% of male partners. Conjugal immune-origin infertility was present in 0.56% of marriages. Out of 1346 treated infertile marriages, an immunologic factor was evidently the only cause of infertility in 2.57 % (Bujas et al 1988).

Anticores were showed to the cause of infertility, anticores growing opposed to sperm. Self-antigens on sperm or opposed to all antigens growing immune responsible is connected within infertile variation (Ekerbiçer 1997, Ekerbiçer 2000). Until today, carried out the results of the researches showed that spermatozoa or seminal liquid had antigenic specialty. It was carried out that anticores have antisperma activity, anticores growing against to this matter. These anticores can grow in either male or female (Logoglu et al 1997). Antisperm anticore was determined 3-12 % of in infertile males. Anticores growing against to sperm are present in the serum liquid and genital system liquid or both liquids of the infertile couples. It was determined that the significant relationship between these anticores and infertility that was more three years. Doing agglutinin or immobilize, these anticores prevent from penetrate to cervical mucus and ruin the motility of sperms. Also, these anticores affect quality of semen possible at altering degrees from azosperm to until normal (Logoglu et al 1997, Bertan & Güler 1995, Ekerbiçer 2000, Kamada et al 1999, Domagala 1996).

Other side, growing anticores, against to sperm antigens setting down in immune system with microorganism opposite reacting or medicine, can form immunologic infertility (Ekerbiçer 2000). Always the whole immune responsible ara formed by macrophages, lymphacinins and

other type cells. To anticore growing to against sperm unknown an inflammation or infection may cause, or obstruction may cause to this condition. The results of the examines carried out in male with vasectomy, determined that obstruction in the majority of these cases caused to form anticores to against sperm. Infertility may be able to occur in males. In result alteration infection part in the infection of the genitourinary system. Anticores presenting in class IgM, IgG and IgA of serum anticores subgroups were found connected with sperm antigens (Ekerbiçer 1997, Weidner 1999).

Antisperm antibodies interfere with the human reproductive events and once they have been produced, antisperm antibodies bind to the spermatic surface and affect both the transport of spermatozoa and the interactions between the gametes. The formation of antisperm antibodies has still not been completely explained and the antigen map of the spermatic surface has not been yet established. The antibody levels in the serum generally do not reflect the immunoglobulin present in the secretions of reproductive tract and in the immunologic screening of the infertile couple we need of direct analysis of antisperm antibodies on the spermatic surfaces. Livi et al have many diagnostic procedures but actually very few therapeutic options: to improve the last question, a better understanding of the phenomena that lead to fertilization is imperative (Livi et al 2000).

Human leukocyte antigens (HLA) class II transcripts in mature spermatozoa of healthy volunteers have recently been demonstrated using reverse transcription polymerase chain reaction (RT-PCR). HLA II expression was investigated on ejaculated sperm cells in fertile and infertile men by RT-PCR and flow cytometry. Among 22 fertile and 20 infertile men, 18 were selected for the study because they showed no contamination with non-sperm cells. HLA II

mRNA transcripts were expressed in all but 1 of 8 infertile subjects and in only 2 of 10 fertile ones. The cytofluorometric analysis on three RT-PCR positive samples confirmed the presence of class II antigens on cell surfaces. These data clearly confirm the presence of both HLA II mRNA and surface molecules on human sperm cells. In addition, an interesting nonrandom distribution of positivity among fertile and infertile samples regarding HLA II expression suggests a possible correlation with infertility (Paradisi et al 2000).

Before fertility sperm's antigens being, should be researched and thought of in the course of fertilization and in early period. Reproduction canal in female isn't an immune competent section, but this section is protective. As local, immune system functions, forming against to infectious agents and fertility with pregnancy occur, are protect from infertility (Bertan & Güler 1995).

Abnormal anticore level was determined in infertile female. The reproduction of the abnormal anticore may affect reproduction function. So, autoimmune diseases should be thought that they may be able to infertility. Genital trauma and trend to infection are cause that anticore and infertility occur in females. Genital trauma and trend to infection were responsible for seen immune infertility in life women (Logoglu et al 1997). Genital infections cause that anticore and infertility take place. Clamidy infection cause to fallen in 2 % rate, and infertility in aproximate 3 % rate, and in the re-production system females more damage than males of that (Paoven 1999). Active immunity in resulted with the responsible of the local IgA and IgG anti-cores against to inactive poliovirus and candidans albicans in women's vagen. IgA, which is secreted against to herpes simplex II virus, was examined, as increased, in the again become severe of the cervical herpes simplex virus (Bertan & Güler 1995).

Endometriosis is described as settle down endometrium layer of the uterus outside in other sections. It was informed that endometriosis occurred at infertile and pelvic pain women with 20-90 % rate, although it is known as complete its prevalence. Endometriosis presenting outside uterus cause to immunity and inflammation responsible. Cytosins and leucocytes take form against to ectopic endometrium. This situation causes to infertility (Hill 1997). In this reason, midwiferies and nurses working at public health services has recognised syptoms of endometriosis.

Antiphospholipid anticores were found high in infertile females particularly the reason of the infertility cannot be explained at situation. Pregnancy possibility is low at females who have these anticores. This situation shows that there is relationship between infertility and antiphospholipid anticores (Kutteh et al 1999, Sherer & Shoenfeld 1998).

Trophoblast antigens are recognized as immunologic in during pregnancy. But these antigens are not polymorphologic. Therefore cytolytic T and natural fatal cells are not recognized. These formations produce hormones decreasing the proliferation and the produce of the T cells. As these alterations occurring in pregnancy may cause infertility and spontaneous fallen (Gennaro & Fehder 1996, Gonzalez et al 1996).

One of the great deal reasons, causing to infertility is alteration occurring in immune system and events, which are occurred by these. Therefore the effect of the immune system should be examined at infertile couples thought. Time is situation working against to patients. So, situation causing to infertility should be determined and cured.

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Even if this topic seems outside nurse and midwife, human is a whole as physiologic, psychologic and biologic. For this reason nurse and midwife must have knowledge in this topic for care and support to infertile persons. Therefore, nurse and midwife can do education and counseling for infertile persons. Thus, immunologic infertility generally not regarded can be investigated, and supplement can be provided to solve this matter of the infertile persons. Nurse and midwife who are working primary health care must have knowledge in immunologic infertility.

## REFERENCES

- Aytekin F et al.* 1995. Review of Psychiatric infertility. *Journal of Women and Birth*;11(3); 119-120.
- Bertan M. Güler Ç.* 1995. Public Health, Base Knowledges. 1. Press Sun Bookshop. Ankara.
- Bujas M. et a.* 1988. Incidence of infertility of immune origin in a group of marriages with unexplained infertility. *Human Reproductive*; 3(3);301-2.
- Domagala A.* 1996. Immunologic response against spermatozoa in the human genital tracts. *Genecology Pole*; 67(6); 304-308.
- Ekerbiçer N. Dündar İH.* 1997. The role of antisperm antibody in infertility. *Sendrom*; 9(5); 63-67.
- Ekerbiçer N.* 1997. The immunologic factors at infertility. *Sendrom.*; 9(11); 44-47.
- Ekerbiçer N.* 1999. Male infertility. *Sendrom*;11(7); 04-108.
- Ekerbiçer N.* 2000. The immunologic mecanism of infertility. *Sendrom*; 12(2); 99-103.
- Gennaro S. Fehder WP.* 1996. Stress, immün function, and relationship to pregnancy outcome. *Nursing Clinincs of North America*; 31(2). 293-300.

**Gonzalez NC et al.** 1996. Immunology of fetal maternal relationship. *Revista Alergia Mexico*; 43(1); 18-22.

**Hill JA.** 1997. Immunology and endometriosis, fact, artifact or epiphenomenon. *Obstetric Gynecologic Clinic of North America*; 24(2); 291-307.

**Kamada M et al.** 1999. Antisperm antibody: a monkey wrench in conception/ magic bullet of contraception. *Journal of Medical Investigation*; 46(1-2); 19-28.

**Kutteh WH et al.** 1999. Antiphospholipid antibodies and reproduction: Antiphospholipid antibody syndrom. *American Journal of Reproductive Immunology*; 41(2); 133-152.

**Livi C. et al.**1993. Immunologic infertility: a basic review. *Allergy and Immunology*; 25(2); 67-9

**Logoglu G et al.** 1997. Infertility. *Sendrom*; 9(2); 46-54.

**Martin MC.**1994. İnfertility.Contemporary Obstetric Gynecology Diagnosis and Therapy. Ed: Martin L. Pernoll. Çev: Rıfat Gürsoy And Tuncay Nas. I. Press. Peace Bookshop. İstanbul.

**Paoven J.**1999. Clamydia tachomatis: impact on human reproduction. *Human Reproductive*; 5(5); 433-447.

**Paradisi R. et al.** 2000 . Human leukocyte antigen II expression in sperm cells: comparison between fertile and infertile men. *Arch Andro*; 45(3);203-13

**Sherer Y. Shoenfeld Y.** 1998. Antiphospholipid antibodies, do they have a pathogenic role in infertility. *Scandinav Journal Rheumatol Supple*; 107. 40-43.

**Weidner W et al.**1999. Relevance of male accessory gland infection for subsequent fertility with special focus on prostatitis. *Human Reproductive*; 5(5); 421-432.