Factors Affecting Pregnancy Outcome in Subfertile Couples Subjected to Intracytoplasmic Sperm Injection.

بعض العوامل المؤثرة على نجاح عملية الحقن المجهري للنطف عند الازواج العقيمين

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الخلاصة:

الهدف :دراسة لبعض العوامل المؤثرة على نجاح عملية الحقن المجهري للحيمن عند الازواج العقيمين

المنهجية: دراسة اجريت في مركز الخصوبة في النجف للفترة من ايلول 2012 والى نيسان2013 شملت140 زوج عقيم اخضع للحقن ألمجهري للحيمن

النتائج: .الدراسة بينت بعض العوامل المؤثرة على نتائج الحمل مثل عمر المرأة، سبب العقم ونوعه، نشاط ونوعية الحيامن المنوية. الدراسة اظهرت تاثيرا معنويا لعمر المريضة و تاثيرا معنويا لنوعية الحيمن و ليس لعدد الحيامن.

الاستنتاجات:عدة عوامل تؤثر في نجاح عملية الحقن المجهري للحيمن .اكثرها اهمية هو عمر المراة و نوع العقم و لنوعية الحيمن و ليس لعدد الحيامن.

التوصيات: نوصي بدراسة هرمونات اخرى مرتبطة بالعقم مثل اللبتين .

Abstract:

Purpose: Studying some Factors Affecting pregnancy outcome in subfertile couples subjected to intracytoplasmic sperm injection.

Method: study performed in fertility center in Al-Sadder teaching hospital in Al-Najaf city during the period between October 2012 and April 2013 , the study include 140 subfertile couples that subjected to intracytoplasmic sperm injection(ICSI).

Results: the results show some factors that affect pregnancy outcome like women age, cause and type of infertility .The results revealed that the age of women was significantly affect the pregnancy outcome, also the results show that sperm quality more important than sperm count .

Recommendations: studying other hormones releated to fertility like leptin

Conclusions: Multiple factors affecting ICSI outcome, the most important one is female age The cause of infertility and its type also affect the outcome , also the results show that sperm quality more important than sperm count .

Key Word: ICSI: intracytoplasmic sperm injection, Subfertile: infertile

INTRODUCTION

Subfertility is defined as failure to conceive within 12-24 months of exposure to pregnancy , some studies suggest a range of lifetime prevalence of infertility percentage range from 6.6 to 32.6% (1). For couples who have had no previous conception, this subfertility is defined as primary, while couples who have had a previous conception and have then not conceived again are defined as having secondary subfertility (2). Subfertility causes great distress to many couples, and lead to increasing number of these couples to seek specialist fertility care(1), Edmond reported that about 15% of all couples are involuntarily subfertile and require fertility treatment (1). In young healthy couples the probability of conception in one reproductive cycle is typically 20-25% and in one year its approximately 90% (3). There still remain many unanswered question and controversies surrounding the use of IVF and ICSI but increase experience, better refinement of these techniques and clear indication for IVF and ICSI will inevitably minimize the risk associated with this procedure (4). ICSI is an optional procedure used during IVF involves removing oocytes from the ovaries, fertilizing them in the laboratory then replacing a specific number of the embryos that develop into the uterus in an attempt to initiate a pregnancy(5). IVF was originally developed in 1978 to help couples in whom women's tubes were block, removed or diseased to the point that a pregnancy couldn't occur, and to allow couples with very poor semen analysis to achieve fertilization and pregnancy (6). As only one

sperm required for each egg, this allows for treatment of couples that have very low sperm count, their sperm can be collected either by masturbation, microsurgical epididymal sperm aspiration (MESA) or testicular sperm extraction (TESE) (7). Female age is a major detriment of success rate of subfertility treatment and was the first prognostic factor in ICSI, since fertility decreases rapidly with age, the number of women seeking fertility treatment because of advancing age increased (8).The most commonly indication of ICSI includes: tubal damage, endometriosis, polycystic ovarian syndrome, cervical hostility , immunological factors ,sever degree of uterine malposition , unexplained infertility, different male causes infertility and others.(9) Low response is observed when outcome of ovarian stimulation is suboptimal leading to a low chance of pregnancy after ICSI (10) low response is one of the significant problems of IVF because it occurs in up to 24% of cases (11). The chance of pregnancy increases along with the number of embryos transferred, so that the implantation probability of a given embryo is increased by 22% for each additionally implanted embryo. The sperm quality is also a vital factor(12).

PATIENTS AND METHODS:

A study conducted at fertility center in Al-Najaf city from October 2012 to April 2013 , include 140 subfertile women subjected to ICSI program. Carful history was taken from each women include: name, age, address, type and duration of infertility. The patients are classified according to their age into 3 age groups(<25years,25-35years, and >35years old) . Hormone level analysis were done during the women second day of menstrual cycle , these hormones include FSH, LH, E2. Seminal fluid analysis also done for the husbands, and the results were classified into: 1-Azospermia, when no sperms in the ejaculate after centtifugation process (these males were subjected to testicular biopsy by MESA or TESE under local or general anesthesia by urologist in fertility center) . 2-Oligozoospermia, when sperms number less than 20milion per ml.3-Asthenozoospermia, less than 50% activity.4-normozoospermia, normal ejaculate as defined by reference value(3). Follow up was done by serial vaginal ultrasound and serial E2 level to evaluate the patient response and predict signs of hyperstimulation. The patient were prepared for oocyte retrieval procedure under general anesthesia , the oocytes received by embryologist for further preparation, ICSI procedure were done . Pregnancy outcome was followed up .

Statistical analysis: SPSS . ver.18 statistical software for window was used to analysed data. Independent-sample t-test was used to detect the significant differences between each two groups of continuous variables. Non parametric data tested by Chi squared test (χ^2). $P<0.05$, $p<0.01$ were considered to be significant at 5% and 1% respectively.

Results :

Table (1): Age groups of total sample and their pregnancy outcome

Age Groups	No.	Mean±SD	Pregnancy outcome	P
<25 years	18	22.55±1.688	0 (0%)	0.000
25 – 35 years	86	29.44±3.135	14(60.87%)	
>35 years	36	39.33±2.541	9(39.13%)	

The total number of patients were 140, 86 patients are of age 25 – 35 years, 14 (60.87%) showed positive pregnancy outcome, and differ significantly ($P\leq0.01$) from other two groups as in table 1 .

Table (2) Type and duration of infertility in the studied groups of women.

Parameters	+ outcome		- outcome		Total	
Type of Infertility	No.	%	No.	%		P
Primary	17	14.41	101	85.59	118(84.29)	0.035
Secondary	6	27.27	16	72.73	22(15.71)	
Duration of Infertility						
<10years	17	17.35	81	82.65	98(70.00)	0.696
>10years	6	14.29	36	85.71	42(30.00)	

Table 2 shows that women with less than 10 years duration of infertility were more liable to become pregnant than those with more than 10years infertility although this was non-significant**.**

Table(3) Causes of infertility in the studied groups

Parameter	+ve outcome		-ve outcome		Total	P
Cause of Infertility	No.	%	No.	%		
Male Cause	10	12.66	69	87.34	79(56.43)	0.000
Tubal Cause	8	32	17	68	25(17.86)	
Ovarian Cause	0	00.00	03	100	03(02.14)	
Unexplained Cause	5	15.15	28	84.85	33(23.57)	

Table 3 shows that causes of infertility (as in table 3) are predominant male factor.

Table (4) FSH, LH and E2 levels of studied women.

Parameters	+ outcome	- outcome	P
	Mean±SD	Mean±SD	
FSH(mlu/ml)	4.73±2.776	5.03±2.111	0.573NS
LH(mlu/ml)	2.82±2.254	2.77±1.768	0.915 NS
E2(Pg/ml)	43.46±15.559	38.27±15.538	0.161 NS

NS = non-significant differences at (P≤0.05) -Independent-Sample t-test)

Table 3 shows that the hormonal study for each woman underwent ICSI ,the results show no significant differences in women that have got pregnancy than in women that haven't got pregnancy.

Table (5) Sperm analysis of studied sample

SFA	+ outcome		- outcome		Total	P
	No	%	No	%	No(%)	
Oligo + Asthenozoospermia	5	21.74	21	17.95	26(18.57)	0.000
Asthenozoospermia	1	4.35	14	11.97	15(10.71)	
Oligozoospermia	3	13.04	11	9.40	14(10)	
Azospermia	2	8.70	21	17.95	23(16.43)	
Normozoospermia	12	52.17	50	42.74	62(44.29)	

Table 5 shows that normal seminal fluid analysis (SFA) male represented 44.3% of all studied sample and significantly (P≤0.01) differ from other types of sperm analysis.

DISCUSSION:

With a growing experience in performing ICSI a better understanding of factors necessary for ICSI success. The majority of these factors are characteristic of female rather than male patient. The results of (table 1) agreed with Gosden et al (2000) study who found the failure rate increased in women age above 35years(13) . The results show that the number of primary infertility was higher than secondary, but the pregnancy outcome in secondary infertility was higher this argeed with Johnson J (2004) study who found that secondary infertility carried good prognostic value(14). Women with less than 10 years duration of infertility were more liable to become pregnant than those with more than 10years infertility although this was non significant (as in table 2). The causes of infertility (as in table 3) are predominant male factor .Tubal causes carried good prognostic outcome than other causes , this indicate that quality of sperms and oocytes are very important in success of IVF. The hormonal study for each woman underwent ICSI done at day two of menstrual cycle , the results show no significant differences in women that have got pregnancy than in women that haven't got pregnancy as in table 4 . In this study, normal seminal fluid analysis (SFA) male represented 44.3% of all studied sample and significantly ($P \leq 0.01$) differ from other types of sperm analysis; however cases with normal sperm were higher in positive outcome than negative outcome group, and those with abnormal sperm activity had poor prognostic value than the number of sperms , as in table 5. Both groups of women show no differences in their endometrial thickness, however women with positive pregnancy outcome have slightly more endometrial thickness. The mean No. of embryos was higher in pregnant women than those who didn't get pregnancy, which was significant as in other studies (15**),** study who found that the chance of pregnancy increases along with number of embryo transferred in 22% for each embryo , this explained by the increased placental mass in early multiple implantation which produce more HCG and progesterone than single placenta (16)**.**

CONCLUSIONS:

Multiple factors affecting ICSI outcome, the most important one is female age The cause of infertility and its type also affect the outcome , also the results show that sperm quality more important than sperm count .

RECOMMENDATION:

Studying other hormones related to fertility like leptin

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