PROGNOSTIC FACTORS OF LOD EFFICACY IN INFERTILITY TREATMENT OF PCOS

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Keywords: *polycystic ovarian syndrome (PCOS), laparoscopic ovarian drilling (LOD), prognostic factors, infertility treatment, outcome.*

Abstract: *To establish the prognostic factors of LOD positive response in infertility treatment of PCOS. Materials and methods: There were analysed 138 clinical cases of patients who were selected according to Rotterdam criteria regarding PCOS, who were hospitalized in the Department of Aseptic Gynecology no.1 at the Municipal Clinical Hospital N.1 of Chişinău city. Results: Age is an important criterion of prognosis. The rate of success is significantly higher in patients of age till 35 years, (p=0,79, χ^2=11,738). Obesity BMI >30 kg/m2 represented a rate of ovulation more reduced p < 0,01 comparing with those with a BMI (26 – 29) - 18%. In patients with T > 4,5nmol/l, ovulation rate is – 13% that meant (p< 0,05) less than ovulation rate - 20,2% in women with T slightly high 2,6-4,4nmol/l. Patients with normal T < 2,6 represented a more successful (p<0,01) (ovulation rate - 42,3%) as against the other groups. LH level has a significant impact: the patients that answered after LOD had LH concentrations pre-treatment ≥ 10UI/l (p=0,29, χ^2=20,862, p<0,001) than those that had less LH< 10UI/l, before LOD. Conclusions: The rate of LOD success correlates with the following criteria: age, the length of infertility, BMI, LH, T.*

INTRODUCTION

Polycystic ovarian syndrome represents one of the most spread forms of endocrinopathy that have as consequence hyperandrogenia and anovulatory infertility.(1,2) Also, it is the most studied pathology from endocrine gynecology and is an important part of reproductive medicine.

There are lots of studies and experiments that aim at studying the clinical manifestations and the reproductive outcome of PCOS patients.

Although it is one of the most discussed pathologies, it is one that is the most difficult to be diagnosed, and can be confounded with endocrine disturbances like: hyperprolactinimia, androgen-secreting tumors, Iţenco – Cushing disease, thyroid pathology etc.

Rotterdam Consensus from 2003 is considered at the moment the "gold standard" of defining PCOS. We should mention that in spite of the fact that it treats in details the difficulties of a correct diagnose, it could not offer much perspective and clear differences, unfortunately.(3)

Many scientists consider that the definition established in 2003 has a lot of unclear points, also superficial points and disadvantages such as hyper diagnosis. At short time after Rotterdam, at the ESHRE reunion in Madrid, the consensus was hardly criticised being under debate not only the diagnose but also the treatment of PCOS.(4)

PURPOSE

The aim of study is to appreciate the factors that can influence the LOD outcome in PCOS patients.

MATERIALS AND METHODS

The study took place in IMSP SCM No.1, during 2012 – 2015 years, based on biological samples that were collected according to modern principles of research, approved by the Ethics Committee of Research of IP USMF Nicolae Testemiţanu. The study included 138 PCOS patients hospitalized in the IMSP SCM No.1, Aseptic Gynecology No.1. Criteria of selection included the patients who observed the Rotterdam consensus (oligo/amenorrea, clinical or biochimical signs of hyperandrogenia, and ultrasound signs of PCOS) and Clomifef Citrate resistance. In order to appreciate all the prognosis factors of efficacy after LOD in PCOS patients, all of them were hormonally tested (LH, FSH, T, AMH) pre- operatively and after surgery on the 2-3 days.

The statistical analysis was accomplished using statistic methods by appreciating the arithmetic media, the error and p criteria. The results were obtained by using the Statistica 6.0, EXCEL and SPSS 16.0 (SPSS Inc) software.

RESULTS AND DISCUSSIONS

The age of the patients represents a significant criterion in obtaining a higher rate as possible in ovulation installation and appearance of pregnancy. Our research established that the rate of success is significantly higher in patients until 35 years of age (p=0,79, χ^2=11,738), and it corresponds with the literature data.

Another criteria that can influence the LOD outcome in PCOS pacients is obesity, and our study showed that it is responsible of the ovulation induction response. The results showed that PCOS pacients with a body mass index (BMI) >30 kg/m^2 presented less rates of ovulation p < 0,01 comparing to those with a BMI between 26 – 29 - 18%, and in patients with normal BMI, the rate of ovulation represented 72,5%.

Analysing the biochemical criteria of hyperandrogenism, we appreciated that the ovulation rates after LOD were more reduced in patients with high levels of T. In patients T > 4,5nmol/l, the rate of ovulation represented

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only – 13% that turned out to be more diminished (p< 0,05) than those that had a T level slightly elevated 2,6-4,4nmol/l and an ovulation rate of 20,2%. The patients with T < 2,6 presented a more successful rate of ovulation (p<0,01) (ovulation rate - 42,3%) comparing with those 2 groups.

Our research showed that the successful installation of ovulatory cycles after LOD also influenced the hormonal levels of LH and had a significant role: the patients that had a positive outcome after LOD had a higher level of LH≥ 10 UI/l preoperatively, and established a high rate of ovulation (p=0,29, χ^2=20,862, p<0,001) comparing with the patients who had a lower LH< 10UI/l levels preoperatively and had bad outcome after LOD.

The rate of pregnancy outcome depends on the infertility duration and we established significant statistical differences.

The highest success in obtaining ovulation and a pregnancy after LOD was in patients who had an infertility less than 3 years (p=0,58, χ^2=21,716), being total different in those with infertility more than 3 years, p< 0,001.

Below, there are presented some data regarding the ovulation rate in PCOS patients that underwent LOD (table no. 1).

Table no. 1. Ovulation rate in PCOS patients who underwent LOD

Factor	Factorial characteristic	Indicators				
		n	Ovulation rate		Pearson	Chi² χ² p
			n	%		
Age, years	<35	118	98	53,4	0,79	χ²=11,738 p<0,01
	>35	20	14	25,0	0,28	
BMI	<25	80	79	62,5	0,91	χ²=11,838 p<0,01
	26-29	34	25	44,1	0,53	
	>30	24	14	16,7	0,32	
Menstrual cycle	regulate	17	14	77,7	0,68	χ²=11,838 p<0,01
	oligomenorrhea	94	77	56,4	0,43	
	amenorrhea	27	21	37,03	0,28	
LH	<10	53	40	49,41	0,76	χ²=20,862 p<0,001
	>10	86	72	28,3	0,29	
Infertility	<3 years	76	63	69,7	0,58	χ²=21,716 p<0,001

Regarding the pregnancy rate, our study established that practically all those mentioned criteria also matters. The age of the patients represents a significant criterion in obtaining a higher rate as possible in the appearance of pregnancy.

Our research established that the rate of pregnancy success is significantly higher in patients until 35 years of age (p=0,81, χ^2=11,74), and it corresponds with the literature data.

Another criteria that can influence the LOD outcome in PCOS pacients is obesity, and our study showed that it is responsible not only for the ovulation induction response, but also on pregnancy outcome. The results showed that PCOS pacients with a BMI >30 kg/m^2 presented less rates of ovulation p < 0,01 comparing with those with a BMI between 26 – 29 - 52,9%, and in patients with normal BMI, the rate of ovulation represented 72,5%.

Analysing the biochemical criteria of hyperandrogenism, we appreciated that the ovulation rates after LOD were more reduced in patients with high levels of T. In patients T > 4,5nmol/l, the rate of ovulation represented only – 13% that turned out to be more diminished (p< 0,05) than those that had a T level slightly elevated 2,6-4,4nmol/l and an ovulation rate of 20,2%. The patients with T < 2,6 presented a more successful rate of ovulation (p<0,01) (ovulation rate - 42,3%) comparing with those 2 groups.

Our research showed that the successful installation of ovulatory cycles after LOD also depends on the hormonal levels of LH and had a significant role: the patients who had a positive outcome after LOD had a higher level of LH≥ 10 UI/l preoperatively, and established a high rate of ovulation (p=0,29, χ^2=20,862, p<0,001) comparing with the patients who had a lower LH< 10UI/l levels preoperatively and had bad outcome after LOD.

The rate of pregnancy outcome depends on the infertility duration and we established significant statistical differences. The highest success in obtaining an ovulation and of course, a pregnancy after LOD it was in patients that had an infertility less than 3 years (p=0,58, χ^2=21,716), being total different in those with infertility more than 3 years, p< 0,001.

Table no. 2. Pregnancy rate in PCOS patients CC resistant after LOD

mFactor	Factorial characteristic	Indicators				
		n	Rate of pregnancy		Pearson	Chi² χ² p
			N	%		
Age, years	<35	118	74	62,7	0,81	χ²=11,74 p<0,01
	>35	20	14	20,0	0,28	
BMI	<25	80	58	72,5	0,82	χ²=11,89 p<0,01
	26-29	34	18	52,9	0,54	
	>30	24	2	8,3	0,12	
Menstrual cycle	regulate	17	12	66,7	0,71	χ²=11,84 p<0,01
	oligomenorrhea	94	56	59,6	0,58	
	amenorrhea	27	10	37,0	0,28	
LH	<10	53	22	41,0	0,29	χ²=20,86 p<0,001
	>10	86	56	65,2	0,73	
Infertility	<3 years	76	59	64,5	0,61	χ²=21,74 p<0,001
	3-6 years	51	27	52,9	0,35	
	>6 years	21	2	9,5	0,19	

CONCLUSIONS

1. The age of the patients represents a significant criterion in obtaining a higher rate as possible in the occurrence of pregnancy. Our research established that the rate of pregnancy success is significantly higher in patients until 35 years of age (p=0,81, χ^2=11,74), and it corresponds with the literature data.
2. Our research showed that the successful installation of ovulatory cycles after LOD also depends on the hormonal levels of LH and had a significant role: the patients who had a positive outcome after LOD had a higher level of LH≥ 10 UI/l preoperative, and established a high rate of ovulation (p=0,29, χ^2=20,862, p<0,001) comparing with

the patients who had a lower LH< 10UI/l levels preoperative and had bad outcome after LOD.

3. The highest success in obtaining an ovulation and of course a pregnancy after LOD was in patients who had an infertility less than 3 years($p=0,58$, $\chi^2=21,716$), being total different in those with infertility more than 3 years, $p< 0,001$.

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