The effect of laterality of endometrioma in IVF/ICSI cycles

Nafiye Yilmaz[1], M. Ufuk Ceran[2], E. Nil Ugurlu[1], H. Cavidan Gulerman[1], Yaprak Ustun[1]

1. *Department of Reproductive Endocrinology, Health Science University, Zekai Tahir Burak Women's Health, Education and Research Hospital, Ankara, Turkey*
2. *Department of Gynecology and Obstetrics, Baskent University School of Medicine, Konya Medical and Research Center, Turkey*

Problem Statement

Endometriosis, the most common gynecological disorder, is a challenging disease observed in 20%-40% of subfertile women. Endometriomas affect 17-44% of women with endometriosis (1,2). Because endometrioma has detrimental effects on fertility. many of these women need Assisted Reproductive Technology (ART) to conceive (3). In this study, we aimed to investigate the effects of endometrioma presence and laterality over In Vitro Fertilization (IVF) and Intracytoplasmic Sperm Injection (ICSI) outcomes.

Methods

The study was designed retrospectively. A total of 159 women enrolled in IVF / ICSI cycles between March 2015-March 2018, were included. Patients were divided into two groups as Endometrioma group (n:73) and control group (n:86). In Endometrioma group, subgroup analysis was performed according to laterality. Demographic characters, clinical and laboratory parameters were recorded. SPSS was used for analysis.

Results

There were no significant differences between groups with respect to age, BMI, stimulation protocols. In endometrioma group, although basal FSH levels was higher than control group, it was within normal limits, while estradiol levels was lower (p<0.001, p 0.042, respectively). Antral Follicle count (AFC), dominant follicle number, total oocyte count, MII oocyte numbers were found to be significantly lower, whereas numbers of embryos achieved, clinical pregnancy rates were found to be similar. In endometrioma group, there were 4 patients with no dominant folicle development and 8 total fertilization failures were observed

With respect to laterality, there were no statistically significant differences in terms of Antimullerian Hormone (AMH) levels, oocyte and embryo quality, the numbers of embryos achieved, pregnancy rates between two groups When compared according to previous history of surgery (26 patients), AFC and AMH levels were found to be lower in patients who underwent surgery, while there was no significant difference regarding oocyte numbers, embryo quality and pregnancy rates (Table 1).

Table 1. The effect of laterality of endometriomas on IVF/ICSI cyles examined in the study

	Endometrioma			P
	None **(n=86)**	**Unilateral** **(n=43)**	**Bilateral** **(n=30)**	
	Median (Min/Max)	Median (Min/Max)	Median (Min/Max)	
Age	30,5 (23 / 42)	31 (24 / 41)	31 (24 / 38)	0,866
BMI	25,5 (16 / 35)	24 (18 / 36)	24 (17 / 31)	0,582
FSH	6 (2 / 18) [BC]	7 (4 / 17)	8 (3 / 20)	<0,001
Peak E2	1813 (778 / 3840)	1490 (186 / 6377)	1587,5 (10 / 4554)	0,116
AMH	-	1,4 (0,01 / 15,06)	1,23 (0,01 / 5,5)	0,775
Ca125	-	28 (6 / 165)	47 (12 / 290)	0,001
	n (%)	n (%)	n (%)	
Antral Follicle Count				
1-4	0 (0,0)	7 (16,3)	6 (20,0)	<0,001
5-9	13 (15,1)	20 (46,5) [A]	17 (56,7) [A]	
>10	73 (84,9) [B C]	16 (37,2)	7 (23,3)	
COH Protocol				
Antagonist protocol	81 (94,2) [B C]	35 (81,4)	23 (76,7)	0,008
Long protocol	5 (5,8)	4 (9,3)	4 (13,3)	
Microdose protocol	0 (0,0)	4 (9,3)	3 (10,0) [A]	
Previous Surgery				
No	86 (100,0)	32 (74,4) [C]	15 (50,0)	<0,001
Yes	0 (0,0)	11 (25,6)	15 (50,0) [B]	
Cyst size				
<4 cm		33 (76,7) [C]	15 (50,0)	0,025
>4 cm		10 (23,3)	15 (50,0) [B]	
Pregnancy				
Negative	56 (65,1)	25 (58,1)	18 (60,0)	0,707
Positive	30 (34,9)	18 (41,9)	12 (40,0)	
	Median (Min/Max)	Median (Min/Max)	Median (Min/Max)	
Number of dominant	8 (3 / 18) [BC]	6 (1 / 12)	6 (0 / 13)	<0,001
Number of total oocyte	10 (1 / 24) [BC]	7 (0 / 22)	7 (0 / 16)	<0,001
Number of MII Oocyte	7 (1 / 17) [B]	5 (0 / 19)	6 (0 / 14)	0,008
Number of fertilizated	3 (1 / 11)	3 (0 / 9)	3 (0 / 13)	0,347
Total GND dose	1562,5 (925 / 2962) [BC]	2100 (825 / 4350)	2212,5 (1200 / 3450)	<0,001
Endometrial thickness	10 (6 / 16)	10 (4 / 14)	9 (3 / 21)	0,258
	n (%)	n (%)	n (%)	
Embryo Grading				
No embryo	0 (0,0)	6 (14,0)	6 (20,0) [A]	0,004
Grade 1	23 (26,7)	10 (23,3)	10 (33,3)	
Grade 2	44 (51,2) [C]	17 (39,5)	10 (33,3)	
Grade 3	3 (3,5)	1 (2,3)	0 (0,0)	
Blastocyst	16 (18,6)	9 (20,9)	4 (13,3)	

Mann Whitney U Test(Monte Carlo), Kruskall Wallis H Test(Monte Carlo); Post Hoc Test: Dun's Test, Fisher Freman Halton Test(Monte Carlo), Pearson Chisuare Test(Exact), Fisher Exact Test(Exact), [A] significant compared to non-endometrioma group, [B] significant compared to unilateral group, [C] significant compared to bilateral group

Conclusion

This study shows that presence of endometrioma negatively effects on fertility parameters like FSH levels, AFC and MII oocyte numbers, albeit no significant effect over embryo quality and pregnancy rates whereas laterality of endometrioma doesn't have any influence over any fertility parameters and pregnancy rates.

Sources

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