

Moderate or severe depression is uncommon in women seeking infertility therapy according to the Beck Depression Inventory

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Summary

Purpose: To determine what percentage of infertility patients have depression.

Methods: The Beck Depression Inventory test was given to new infertility patients on a voluntary basis.

Results: There were no women with moderate or severe depression. In fact only 10% (3/30) scored mild depression. For those women without or with minimal depression 37% (10/27) conceived on their first cycle vs none (0/3) of those with mild depression.

Conclusions: The numbers with mild depression were too small to make valid conclusions. However, this group had a significantly longer length of infertility. Thus even if a more extensive study shows similar data it may well be that the length of infertility causes only mild depression rather than that depression leads to infertility. However the possibility still exists that even mild depression may to some degree impair success with infertility therapy.

Key words: Depression; Infertility; Depression inventory test.

Introduction

There have been numerous studies showing that patients seeking treatment for infertility have a greater frequency of depression, as determined by standardized questionnaires [1-9]. Additionally, studies have shown that those who have a longer duration of infertility have high depression scores [3, 10-12]. In relationship to treatment, studies have shown that patients undergoing in vitro fertilization (IVF) have increasingly higher depression scores when they do not conceive, and the scores correlate with the number of attempts at IVF [13, 14]. There have been conflicting studies regarding whether depression scores are related to the etiology of infertility among infertile patients [1, 3, 11, 12, 15].

Despite the multitude of studies linking infertility and depression, few studies have focused on the relationship between depression and success of infertility treatment. The studies that have been performed suggest that women deemed to be depressed by varying assessment tools have had lower pregnancy rates when undergoing treatment [13, 16]. A 1990 study showed that women undergoing a behavioral treatment program based on increasing their relaxation response had statistically significant decreases in depression and indicated a 34% increase in pregnancy rates within six months after enrolling in the program [17]. A later study in 1999 showed that 42% of "psychologically distressed" women seeking treatment for infertility achieved pregnancy within six months after participating in a group cognitive-behavioral treatment program [18].

The purpose of this study was to correlate depression scores and success rates of infertility treatment as determined by pregnancy rates. Our objective was to compare the pregnancy rates following treatment for infertility in those women who are depressed and those that are not. The hypothesis of this study was that patients who score highest (i.e., most depressed) on standardized depression tests would have lower success rates with infertility treatment, with a longer duration of treatment needed to achieve pregnancy and overall lower pregnancy rates, when compared to individuals whose scores are lower. If an association between depression and infertility treatment success outcomes can be found, then subsequent controlled studies could be performed to determine if either pharmacological or psychological therapy could improve pregnancy outcome.

Materials and Methods

Our targeted population was women seeking treatment for infertility (infertility being defined as inability to conceive on one's own following one year of unprotected intercourse). Our sample consisted of new patients who presented for treatment between March and November 2003 at our outpatient infertility center. All patients completed consent forms approved by Cooper Hospital's Institutional Review Board. They then completed the Beck Depression Inventory. All new patients were asked to participate in the study. Patients were asked to complete the questionnaire while in the waiting room, before seeing a physician. They were given the opportunity to ask any questions and were given contact numbers for the investigators.

The Beck Depression Inventory (BDI) was developed in the early 1960's and includes 21 self-report items. Each question has four statements describing increasing levels of severity. The total score ranges from 0 to 84, and is interpreted as such: scores of 0 to 9 are considered no or minimal depression; 10 to 16, mild; 17 to 29, moderate; and 30 to 63, severe [17].

Revised manuscript accepted for publication February 6, 2006

Upon review of the subjects' charts, ten characteristics were to be measured for comparison: BDI scores; age when presented to the center for treatment; gravidity and parity; etiology of infertility, as determined by the physician at the center; length of infertility, as reported by the patient; height and weight, as recorded by the staff on the first visit; treatment modality, being intrauterine insemination, ovulation induction, or IVF; number of embryos transferred, if applicable; and outcome, as determined by positive or negative clinical pregnancy.

It was decided that individuals who would be excluded from the study would be those with a history of recurrent pregnancy loss, oocyte donors, and same-sex couples seeking a gamete donation, as these do not truly reflect infertile patients. Individuals whose infertility etiology was unknown were also excluded.

Statistical analysis was performed with the Wilcoxon test; *p* values less than 0.05 were considered significant.

Results

There were 30 women who met the appropriate criteria and formed the basis of our data.

Distribution of Beck scores

The scores on the Beck Depression Inventory ranged from zero to 13. The distribution of the scores is presented in Table 1. The most frequent score was zero representing 50% of the patients. There were three patients with scores in the mild depression range. No patients scored in the moderate or severe depression range.

Comparison of Beck scores and outcome

Ten patients achieved a clinical pregnancy after their first cycle of treatment (33.3%) (Table 1). All of the pregnancies were achieved in women with Beck scores less than four.

Table 1. — Comparison of outcomes by Beck depression score.

Scores	Frequency	Clinical pregnancy rate
0	15	46.7% (7)
1	2	50.0% (1)
2	3	33.3% (1)
3	2	50.0% (1)
5	1	0.0% (0)
7	3	0.0% (0)
9	1	0.0% (0)
10	1	0.0% (0)
12	1	0.0% (0)
13	1	0.0% (0)

Table 2. — Outcome of treatment by depression status.

	Minimal depression (0-9)	Mild depression (10-16)
Clinical pregnancy	37.0% (10/27)	0.0% (0/3)
Treatment modality		
IUI and/or treatment of ovulatory defect	10 (37%)	2 (66.7%)
IVF	17 (63%)	1 (33.3%)
Avg. # of embryos transferred	2.3 ± 1.1	2.0

A comparison of pregnancy rates by minimal (0 to 9) and mild depression (10 to 16) is presented in Table 2. Though all pregnancies occurred in patients with minimal scores, the sample size was too small to do any statistical hypothesis testing.

Patient characteristics

Table 3 shows the characteristics of the patients studied in relationship to their BDI scores. The two groups differed in length of infertility.

Table 3. — Confounding variables and pregnancy rates with minimal vs mild depression.

	Minimal depression	Mild depression
Clinical pregnancy	37.0% (10/27)	0.0% (0/3)
Age	35.4 ± 5.4 (24-47)	35.6 ± 7.4 (30-44)
Height in inches	64.3 ± 2.7 (60-69)	63.0 ± 2.7 (60-65)
Weight in pounds	144.8 ± 35.6 (100-232)	171 ± 27.1 (140-190)
Length of infertility*	3.5 ± 3.4 (0-14)	8.7 ± 6.5 (2-15)
Gravidity	1.0 ± 1.1 (0-4)	1.7 ± 2.1 (0-4)
Etiology		
Tubal	7	0
Male factor	6	2
Multiple	4	0
Other	10	1
(polycystic ovarian syndrome, premature ovarian failure, elevated FSH, endometriosis)		

**p* < .05, ANOVA.

Discussion

This was a pilot study to see if there is a significantly large population of infertile women with depression. According to the data, most women seeking infertility do not have clinical depression. It is possible that for some reason moderately or severely depressed women refused to fill out the form when given to them on a voluntary basis, but there is no reason to believe that is a likely explanation for the paucity of depression scores.

If we had found a significant population with depression and established that they had a much lower pregnancy rate than minimally depressed women, then one could initiate a trial study of the effects of psychotherapy or antidepressant therapy on outcome.

Some might look at the 37% pregnancy rate in the 27 with no depression vs 0% in the three patients with minimal depression as at least consistent with the hypothesis of worse prognosis in women with depression. However, our interpretation is that probably the depression did not contribute to the infertility but was rather related to the much longer length of infertility in this population. It seems obvious that a woman with longer length of infertility, possibly having spent lots of money on previous infertility treatment, would be more frustrated and would be likely to be somewhat more depressed.

We originally assumed that based on previous studies that we would see a much greater percentage of moderate or severe depression in this infertile group [1-9]. The

unique aspect of this prospective study was to see if, after considering confound variables, we could determine a lower pregnancy rate despite infertility therapy in more depressed patients. If such a refractory group was found then a controlled study of the effect of antidepressants could be tried. Unfortunately our initial data do not support the previous literature finding an association of depression and infertility, at least when using Beck's Depression Inventory test.

Based on this pilot study we have decided not to pursue our efforts any further to identify a population to determine if therapy for depression can help treat infertility. We estimate that only about 5% of the new infertility patients voluntarily filled out the form. Possibly patients with moderate or severe depression are not as likely to voluntarily complete the questionnaire. Mandatory responses of the BDI might possibly identify a larger population with depression making it more possible to answer the question as to whether this subgroup proves more refractory to infertility therapy. It probably would be best to take a few extra minutes and have a psychologist, nurse or physician personally ask these questions on the BDI and record the answers.

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