

Prospective study of depression and anxiety in female fertility preservation and infertility patients

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Objective: To prospectively assess anxiety, depression, coping, and appraisal in female fertility preservation (FP) patients compared with infertile patients.

Design: Prospective pre- and post-treatment survey.

Setting: Academic medical center.

Patient(s): Forty-seven women with cancer (FP patients) and 91 age-matched infertile patients.

Intervention(s): None.

Main Outcome Measure(s): Depression, anxiety, coping, infertility-related stress, appraisal of treatment, and medical outcomes.

Result(s): FP patients reported more symptoms of anxiety and depression than infertile patients, but infertile patients' symptoms worsened over time; 44% of FP and 14% of infertile patients' scores exceeded the clinical cutoff for depression before treatment. The interval between surveys and medical treatment data did not predict changes in mood symptoms. Coping strategies and infertility-related stress did not differ between groups, and avoidant coping predicted higher depression and anxiety scores.

Conclusion(s): FP patients reported more anxiety and depression than infertile patients at enrollment in treatment, with more than one-third of FP patients reporting clinically significant depressive symptoms. However, infertile patients' anxiety and depressive symptoms increased across treatment. This increase was not related to time between registration for IVF and oocyte retrieval or the medical aspects of treatment. FP and infertile patients should be provided psychologic consultation before treatment to identify mood and anxiety symptoms and to refer patients for counseling as needed to prevent worsening of symptoms. (Fertil Steril® 2014;102:1377–84. ©2014 by American Society for Reproductive Medicine.)

Key Words: Fertility preservation, IVF, psychologic, counseling

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Young cancer patients are increasingly interested in preserving their fertility before undergoing gonadotoxic therapies (1–5). Female cancer patients can preserve their fertility by undergoing embryo or oocyte cryopreservation before beginning cancer treatment (6). Oocytes or embryos can be cryopreserved and

stored until the cancer has been treated and the woman is ready to attempt pregnancy. Although the medical safety and treatment protocols for fertility preservation (FP) via controlled ovarian hyperstimulation (COH) have been well documented (1–4, 7), there is limited research addressing the psychologic issues that arise in FP

patients. Based on the research describing the emotional aspects of in vitro fertilization (IVF) for infertile couples (8), the psychosocial stressors associated with IVF or FP likely include the physical and emotional side effects of medications and procedures (9–12), treatment expense (13–17), relationship changes after embryo cryopreservation which may interfere with a patient's use of the embryos (18–21), and religious/ethical issues related to embryo disposition (14, 22–25).

IVF, though providing the hope of family building opportunities, has also been perceived by patients to be a stressful experience (26). Coping with IVF can be conceptualized from the stress and coping model of Lazarus

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and Folkman (27). This model has been used in earlier studies of the stress of infertility but has not been applied to studies of the psychological adjustment to FP (28–30). In this model, psychologic harm is mediated by an individual's appraisal of the event and the ways in which they cope with the event. If the individual appraises the event as harmful or threatening, and their stress overwhelms their coping resources or results in problematic coping, such as ignoring the problem, then depression and/or anxiety may result.

Research on infertile IVF patients has found that 20%–50% report mild to moderate symptoms of depression, 2% report severe symptoms of depression, 15%–56% report clinically significant anxiety, and these symptoms worsen after failed treatment cycles (31–33). Of the few studies that have been conducted with FP patients, it has been found that a considerable percentage of FP patients also experience emotional distress during treatment with as many as one-third reporting significant anxiety or depression symptoms and 14% taking prescribed antidepressant medication (5, 14). These rates of anxiety and depression are similar to those reported by Peate et al., in which 32% of young breast cancer patients reported symptoms of anxiety and 10% reported symptoms of depression (34).

In addition to the similarities across infertile and FP patients' experiences, there are unique stressors for both groups. Specifically, infertile patients are concerned about immediate chances of pregnancy, whereas FP patients are in the early stages of coping with their cancer diagnosis. FP patients have cancer-specific concerns about their mortality, future disease recurrence, implications of genetic testing (e.g., *BRCA*), body image concerns, and are concerned about the effects of cancer treatment on their sexuality as well as on current and future relationships (14, 16, 35–39). FP patients are also likely to have fertility treatment-specific concerns about the health consequences of delaying their cancer treatment to pursue FP, the potential effect of high doses of injectable gonadotropins on cancer recurrence (especially with hormonally sensitive cancer types), the need to make treatment decisions within days or weeks (17, 24, 35, 40), and the emotional consequences of posthumous reproduction should they ultimately succumb to their disease (7, 41–43).

The multiple differences in the emotional aspects of IVF for infertile patients and FP treatment via COH may result in differences in the psychologic experiences of these two groups during treatment. However, there have been no prospective assessments of the psychologic status of FP patients as they undergo treatment and no direct comparison of the psychologic experiences of FP and infertile patients. The purpose of the present study was to describe the occurrence of symptoms of depression and anxiety in FP and infertility patients at the onset of COH treatment and examine the change in depression and anxiety symptoms across each patient's first treatment cycle. In addition, we hypothesized that negative appraisals of treatment and problematic coping (i.e., avoidance and internet use) are related to higher scores on measures of depression and anxiety.

MATERIALS AND METHODS

Participants

The sample included 47 consecutive premenopausal female FP patients and 91 consecutive prospectively age-matched female infertile patients who were beginning their first cycle of COH from 2011 to 2013. Two additional FP patients were not included in the study because they consented to participate in the study but did not complete either questionnaire. Four FP and 4 infertile patients declined study enrollment. Patients who were <18 years old or were non-English speaking were excluded from the study.

Procedures

All participants had a routine pretreatment registration appointment that included physician, nurse, and psychologist consultations. The study participants completed two questionnaires. The pretreatment survey (T1; 175 items) was administered at the time of registration for COH treatment and the post-COH survey was completed before sedation on the day of oocyte aspiration (T2; 104 items). The post-COH survey was administered at that time to assess the subject's emotional state after exposure to ovarian stimulation but before pregnancy. Thus we could assess the relationship of a measure of mood unaffected by knowledge of pregnancy outcomes with later assessments of dependent variables. The surveys contained questions about the patients' demographics and medical history, including age, marital status, reproductive history, racial/ethnic status, mental health history, insurance coverage, and previous cancer treatment. Treatment data included gonadotropin dosage, antimüllerian hormone (AMH) values, peak E_2 , oocyte quality and quantity, pregnancy data, and treatment expectations.

Measures

1. Depressive symptomatology was assessed at both time points with the use of the Center for Epidemiologic Studies Depression Scale (CES-D; a 20 item, Likert scaled questionnaire) (44), with higher scores reflecting greater symptomatology. Scale scores of 16–21 indicate mild–moderate depressive symptomatology, and scores >21 indicate probable major depression.
2. The State-Trait Anxiety Inventory (STAI) (45) was used to assess both current (STAI-S; state) and general (STAI-T; trait) levels of anxiety. The STAI contains 40 Likert-scale items, with higher scores reflecting greater symptomatology and a suggested cutoff of 39 for clinically significant anxiety (46). State anxiety was measured at both time points, and trait anxiety was measured only at T1.
3. The Ways of Coping–Revised scale (WOC-R) contains 29 Likert-scale items and was used at both time points to measure three dimensions of coping: self-blame and avoidance [SBA], informational and emotional support seeking [IES], and cognitive restructuring [CR]). Higher scores on the WOC-R subscales reflect more coping activity (47).
4. Appraisal of Life Events scale (ALE) (48) was used at both time points to assess three dimensions of the cognitive

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