Mental state assessment of recipients in the IVF donor programs and psychotherapeutic methods of its correction

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ABSTRACT
The management of infertility with assisted reproductive technologies (ART) could solve a medical problem but still leave psychosocial problems, associated with both long-term infertility and specific treatment, unaddressed in a number of cases. Evaluation of the mental state of recipients in the IVF donor programs and its dynamics when mid-term multimodal psychotherapy has been used. The study was conducted in the Family Medicine Center—an ART clinic of the city of Ekaterinburg, Russia between 2016 and 2017. Mental state assessment of 200 potential female candidates for the IVF programs was made with the following methods: figures test and color test of relations, a method for the self-assessment of the emotional state by Hans Eysenck, a method for assessing neuropsychic stress by Nemchin, an original questionnaire for patients of the ART clinic. In our study, it was revealed that women requiring donor oocytes with indirect motivation to have a child demonstrated predominantly a high and moderate level of anxiety, frustration, aggression, rigidity, and neuropsychic stress. The vast majority of women had partial compliance for treatment. With psychotherapeutic approach using mid-term multimodal psychotherapy, patients’ compliance for treatment could be improved, resulting in a reduction in negative mental states and development of adequate motivation for oocyte donation in the IVF programs.

Introduction
The birth of healthy children is thought to be one of the main priorities of modern society. However, despite the high development of assisted reproductive technologies (ART) in medicine, the number of patients with infertility almost has not been decreased [1]. Such a diagnosis negatively impacts all spheres of the patient’s life: physical, social, and spiritual. Moreover, infertility affects all aspects of family relationships, both interpersonal and sexual. The widespread introduction of ART into clinical practice currently enables to overcome the problem of infertility in many couples; however, does not completely solve a wide range of psychosocial problems arising both due to a long-term infertility and specific treatment [2]. In this regard, this problem needs to be investigated not only by specialists in medicine and biology (embryology), but also specialists in the field of clinical and social psychology.

Most data in the modern literature have been devoted to the impact of stress on fertility [3,4], as well as the correlation between the quality of patients’ life and the level of distress [5]. The researchers found that the age and duration of infertility treatment increased the level of stress and negatively correlated with the quality of marriage and mental health [6]. To date, there are only single and contradictory publications presenting the results of mental state examination of patients in the ART programs [7].

When examined the severity of anxiety and depression, as well as the specific strategies to cope with stress in patients requiring the ART programs [8], some authors found that the level of stress and its impact on the quality of life in patients with the ART programs were dependent on gender and age [9,10]. Other studies did not confirm any significant age differences in this category of patients [6].

Such a contradiction could probably be explained by a geographical factor and cultural differences between countries with a special attitude towards the problem of infertility in each country. However, most of these studies have ignored the whole spectrum of psychophysiological causes leading to a high level of anxiety and stress, and in some cases, even depression in patients requiring the ART programs.

In addition, the researchers focused their attention on the reasons for refused treatment before achieving a positive result even in patients with a good prognosis of treatment outcomes. Although in some studies, poor prognostic treatment outcomes and high cost of the treatment were considered to be the main factors of failure, recent studies have not confirmed that data [11]. Currently, most researchers agree that the reasons for the refused treatment with ART were associated with psychological aspects, such as prolonged stress, anxiety, and development of depression, including the period of the IVF program itself [12].

Only a small part of all psychological research paid attention to the problem of donor programs, even though these programs have been used quite often. At the same time, most of the donor programs are performed with oocyte donation [13]. Most of the studies were devoted to the social and psychological state of...
recipients and donors [14], and only a small part of them examined psychological problems of patients making a decision about the use of donor oocytes before, during, and after the IVF program [2].

The problem of patients’ motivation for IVF with donor eggs has almost not disclosed anywhere. For this reason, it seems relevant to study the motivation and its correlation with the mental state of patients who made a decision about oocyte donation in the IVF programs. Importantly, the motivation of patients largely determines the patients’ compliance for treatment.

**Objective**

Evaluation of the mental state of recipients for IVF donor programs and its dynamics when applying mid-term multimodal psychotherapy.

**Hypothesis**

The initial mental state of recipients is the main reason for refusal from the IVF donor programs and poor compliance for treatment, requiring a personalized psychotherapeutic approach to improve motivation for oocyte donation.

**Materials and methods**

The cohort consisted of 200 late reproductive age women requiring donor oocytes at enrollment. Research protocol was approved by the Independent Ethical Committee of Joint-Stock Company – Family Medicine Center, Ekaterinburg, Russia (# 010, dated October 7 2016). The research was held in strict accordance with international and national law acts ‘On proper clinical practice’ and of IVF performance with donor’s oocytes [15–19]. At the first stage, the initial mental state and motivation to have a child were examined in potential oocyte recipients for the IVF donor programs. According to the results of the examination, women demonstrated the two types of motivation for infertility treatment with oocyte donation: group I (27 recipients) with direct motivation and group II (173 recipients) with indirect motivation. Women with direct motivation, that is, with clear motives to have a child using any ART program, were excluded from the further study.

In a further randomized prospective study, we included only patients with indirect motivation when having a child was not the main goal of infertility treatment with the donor program (173 recipients). Randomization was carried out using computer-generated random numbers. The recipients were divided into two groups: the study group and the control group. The groups had no significant differences in age, educational level, marital status, duration of infertility, and the number of unsuccessful IVF attempts in history (p > .05) (Table 1).

| Parameters                              | Study group (n = 87) | Control group (n = 86) | p Value |
|-----------------------------------------|---------------------|-----------------------|---------|
| Mean age                                | 38.4 ± 3            | 38.1 ± 2.85           | >.05    |
| Higher education                        | 80.5%               | 86%                   | >.05    |
| Vocational secondary education          | 19.5%               | 14%                   | >.05    |
| Marital status (married)                | 100%                | 100%                  | >.05    |
| Duration of infertility treatment       | 6.2 ± 2.6           | 6.9 ± 2.4             | >.05    |
| Number of IVF protocols (in past history)| 3.2 ± 1.05         | 4.1 ± 1.3             | >.05    |
| Reproductive losses (in past history)   | 37.9%               | 41.8%                 | >.05    |

For mental state assessment, the following methods have been used

1. Figures test and color test of relations by Brutman et al. [20] adjusted in order to identify the characteristics of motivation for having a child and the ART programs. This technique enables to evaluate the attitude of women to pregnancy and to a future child.
2. A method for self-assessment of the emotional state by Eysenck [21]. For mental state assessment of potential recipients of oocytes, the method of self-evaluation of the mental state by Eysenck was used. The technique enables to assess the indicators of anxiety, frustration, aggression, and rigidity.
3. A method for assessing neuropsychic stress by Nemchin [22]. This technique enables to assess the signs of neuropsychic stress and the severity of the condition.
4. An original questionnaire for patients of the ART clinic developed in Family Medicine Center enables to assess patient’s compliance for the treatment. This technique represents a standardized feedback from the attending physician and enables to evaluate not only the behavioral and emotional characteristics of the patient during the therapeutic communication but also compliance for the treatment. Follow-up and diagnostic interview were used to obtain some additional data.

**Results and discussion**

The first stage of the study included initial mental state diagnostics in potential oocyte recipients for the IVF donor programs using a method for assessing neuropsychic stress by Nemchin. According to the test results, the majority of women with indirect motives (86.5%) tended to have moderate and high levels of anxiety, frustration, and rigidity. Moreover, women with indirect motivation, had predominantly moderate level of the neuropsychic stress (43.7%), whereas high neuropsychic stress was observed only in 21.8% of cases and low level of stress – in 34.5%. These data suggest that women with indirect motivation to have a child experienced distress, which significantly reduced their quality of life.

Assessment of compliance for treatment revealed that only 23% of women were completely compliant for treatment, took prescribed medications in full and on time, and had a high level of trust in the attending doctor. High compliance for treatment was more commonly found (in 23% of cases) in women who had a ‘motive shift towards a target’ or in cases when the IVF program with donor oocytes was the only opportunity for the birth of a healthy child. The vast majority of patients (68.9%) initially noted an ambivalent attitude toward the treatment, raised
The motives of women with indirect motivation were divided into the following subgroups:

- ‘The last chance’ (72 respondents, 41.6%). The motives to have a child were determined not by the desire itself, but by the fear not to have time to give a birth due to late age and/or concomitant diseases. The patients of this group had a high or moderate level of neuropsychic stress, a high level of anxiety, and frustration associated with the upcoming pregnancy and maternity.

- ‘Pregnancy at all costs’ (55 respondents, 31.8%). In this category of patients, due to the prolonged and unsuccessful treatment, psychological maladjustment manifested as impaired social interaction was revealed. Pregnancy was perceived as a super goal displaced to substitute other activities such as communication, social and personal development. The patients showed a high level of frustration, retrospective thinking (stuck in the past, searching the reasons of infertility), which led to ‘a motive shift towards a target’.

- ‘A child as a means of procreation’ or ‘a child for grandparents’ (15 respondents, 8.6%). With this motive, the decision to give birth to a child was taken in close dependent child–parent relationships and perceived either as a debt or as a means of switching parents’ attention from a future child to themselves. Women with these motives made a difficult decision about donor programs, it sometimes took several months to several years to adopt this decision. After deciding to enter the IVF donor programs, such patients might even experience negative emotions regarding the possible onset of pregnancy. Patients described their experiences during pregnancy as bearing a ‘strange’ child.

- ‘A child as a means of compensation’ due to a sense of inferiority to a husband, relatives or society (21 respondents, 12.2%). This type of motive especially often occurred in couples where a woman was much older than a man. Thus, the only way to prove her worth to a man and be accepted by his family was the birth of a child. The decision about donation program was accompanied by a wide range of feelings and a high level of neuropsychic stress and anxiety.

- ‘A child is a means of supporting marriage and/or achieving material benefits’ (five respondents, 2.9%). In this case, the birth of a child was not a goal in itself, however, it was necessary to enter or support marriage with a particular man or to get a long-term financial support from a man and relatives. However, when such a decision was made, women often experienced negative feelings about a possible pregnancy.

- ‘Masked renunciation of maternity’ (four respondents, 2.5%). There was no motivation for having a child, however, these patients did not openly report their adherence to childfree cohort of women due to various social and family reasons. These patients agreed to participate in donor programs but try to follow an unsuccessful treatment scenario. In this regard, the doctor’s recommendations were not followed, the medications were not taken in

### Table 2. Women’s mental state dynamics in the study group (n = 87) after mid-term multimodal psychotherapy.

| Parameters                                | Initial mental state, % | Mental state in 3 months, % | p value |
|-------------------------------------------|-------------------------|-----------------------------|---------|
| Anxiety, high level                       | 22.7                    | 8.4                         | .009    |
| Anxiety, moderate level                   | 44.6                    | 26.1                        |         |
| Anxiety, low level                        | 32.7                    | 65.5                        |         |
| Frustration, high level                   | 27.0                    | 9.3                         | .003    |
| Frustration, moderate level               | 32.0                    | 22.9                        |         |
| Frustration, low level                    | 41.0                    | 67.8                        |         |
| Aggression, high level                    | 9.6                     | 4.5                         | .001    |
| Aggression, moderate level                | 48.7                    | 25.2                        |         |
| Aggression, low level                     | 41.7                    | 70.3                        |         |
| Rigidity, high level                      | 22.9                    | 4.6                         | .007    |
| Rigidity, moderate level                  | 41.3                    | 37.9                        |         |
| Rigidity, low level                       | 35.8                    | 57.5                        |         |
| Neuropsychic instability, high level      | 21.8                    | 9.1                         | .01     |
| Neuropsychic instability, moderate level   | 43.7                    | 29.8                        |         |
| Neuropsychic instability, low level       | 34.5                    | 61.1                        |         |
| Compliance, complete                      | 23.0                    | 35.6                        | .033    |
| Compliance, partial                       | 68.9                    | 60.4                        |         |
| Compliance, low or absent                 | 9.1                     | 4.0                         |         |

### Table 3. Women’s mental state dynamics in the control group (n = 86) without mid-term multimodal psychotherapy.

| Parameters                                | Initial mental state, % | Psychic mental in 3 months, % | p value |
|-------------------------------------------|-------------------------|-----------------------------|---------|
| Anxiety, high level                       | 18.6                    | 19.7                        | .05     |
| Anxiety, moderate level                   | 51.2                    | 53.4                        |         |
| Anxiety, low level                        | 30.8                    | 26.9                        |         |
| Frustration, high level                   | 23.3                    | 20.9                        | .97     |
| Frustration, moderate level               | 38.4                    | 44.1                        |         |
| Frustration, low level                    | 38.8                    | 35.0                        |         |
| Aggression, high level                    | 11.6                    | 9.3                         | .97     |
| Aggression, moderate level                | 53.4                    | 46.5                        |         |
| Aggression, low level                     | 35.0                    | 44.2                        |         |
| Rigidity, high level                      | 18.0                    | 17.4                        | .49     |
| Rigidity, moderate level                  | 34.0                    | 34.9                        |         |
| Rigidity, low level                       | 48.0                    | 50.7                        |         |
| Neuropsychic instability, high level      | 19.0                    | 20.9                        | .697    |
| Neuropsychic instability, moderate level   | 53.0                    | 48.8                        |         |
| Neuropsychic instability, low level       | 28.0                    | 30.3                        |         |
| Compliance, complete                      | 30.2                    | 26.7                        | .24     |
| Compliance, partial                       | 55.9                    | 51.3                        |         |
| Compliance, low or absent                 | 13.9                    | 22.0                        |         |
full and on time. These women could come into a conflict with a doctor. With a positive outcome of treatment, they experienced severe negative feelings with regard to pregnancy and in some cases they interrupted pregnancy.

Conclusions

In women with indirect motivation to have a child requiring IVF with oocyte donation, high and moderate level of anxiety, frustration, aggression, rigidity, and neuropsychic stress was prevailed. The vast majority of these women had partial compliance for treatment. The psychotherapeutic effect of mid-term multimodal psychotherapy contributes to improved compliance for treatment, reducing negative mental states, and developing an adequate motivation for oocyte donation in the IVF programs.

Disclosure statement

The authors report no conflicts of interest. The authors alone are responsible for the content and writing the article.

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