

Anxiety During Pregnancy: Comparison of Women Who Have Received Sterility Treatment and Those with Unaided Pregnancies

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妊婦の不安

— 不妊治療後の妊婦と治療を受けていない妊婦との比較 —

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The aim of the present study was to elucidate the characteristics of anxiety and its severity in pregnant women who have received sterility treatment, for the purpose of providing such women with appropriate care during pregnancy.

1. Study background In recent years the field of reproductive medicine has made remarkable advances, and artificial insemination by microscopic in vitro fertilization is practiced in Japan as in other countries. Such advances in sterility treatment have increased the number of opportunities for pre- and postnatal care of expectant mothers who have undergone sterility treatment. In the course of providing such care, the author became aware of a tendency for women who had received sterility treatment to feel greater anxiety than women with unaided pregnancies, leading to the present study. The following characteristics may be given for couples receiving sterility

treatment, especially with regard to the environment surrounding the woman.

(1) There is a strong awareness of family lineage in Japan, and strong expectations among the husband's parents and relatives for the birth of a family heir. (2) It is a commonly held belief in society that children naturally follow marriage, and the question "Do you have children?" is heard almost like a routine greeting. (3) A bias exists equating inability to produce a child with a problem on the part of the woman.

In this social context, the worries of an infertile couple are great. In such a situation, artificial manipulation in the reproductive process only adds to the anxiety felt from the social bias toward the handicapped and the huge expectations in the family for the birth of a child. If the couple then achieves pregnancy, their joy may be accompanied by an overwhelming sense of having to give safe birth to a healthy child. For the above reasons, it is thought

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that anxiety is increased in women who have received fertility treatment.

2. Definition of terms For the purposes of this study, anxiety is classified as general anxiety and maternal anxiety. General anxiety is anxiety due to the personality traits of the pregnant woman, while maternal anxiety is anxiety related to pregnancy, parturition, and child rearing¹⁾.

3. Methods

1) Subjects The subjects included women who became pregnant through sterility treatment and women with unaided pregnancies. All were primipara in the second trimester of pregnancy with no abnormalities in the fetus or the course of the pregnancy. Based on the idea that there may be changes in anxiety during pregnancy according to numbers of pregnancy and gestational age^{2),3)}, all the primipara in the present study were in the second trimester of pregnancy, which is the period when women become aware of fetal movement.

2) Methods Subjects were surveyed using a self-report questionnaire. The purpose of the study was explained to the women when they visited the hospital for a health check, and the survey forms were distributed only to those who gave their consent to participate in the study. The women completed the forms, put them into an envelope themselves, and sealed the envelope for collection on the same day. The survey forms included a scale of anxiety and questions on the attributes and types of anxiety, to which the subjects responded by writing freely. The anxiety scale was the prenatal anxiety scale (revised version) developed by Hanazawa⁴⁾ (Table 1). This prenatal anxiety scale

consists of 16 questions related to anxiety arising from a woman's personality characteristics, and 32 questions on anxiety related to pregnancy, parturition, and child rearing. The questions on anxiety related to pregnancy, parturition, and child rearing were organized into 8 domains with 4 questions each. The 8 domains were "Course of pregnancy," "Fetal development," "Influence of mother's body (Will my own physical state adversely affect my baby?)," "Anticipation toward childbirth (Will I be able to deliver without complications?)," "Expectations for the baby (Can I give birth to a physically and mentally healthy baby?)," "Anticipation toward child rearing (Can I provide stable care for the child after delivery?)," "Changes to the mother's physical appearance (Will my figure change from the pregnancy and delivery?)," and "Relationship with the husband (Will my relationship with my husband change as a result of the pregnancy and delivery?). Each question was answered on a 4-step scale from "Often/Exactly" (3 points) to "No, not at all" (0 points), with higher scores indicating a greater level of anxiety.

3) Analysis The subject responses were analyzed using the SPSS statistical package to conduct a t-test and chi square test.

4. Results Valid responses were obtained from all the women who consented to participate in the study. The primipara who had undergone sterility treatment were the "treated group," and those who had unaided pregnancies the "control group." There were 46 women in the treated group and 59 in the control group.

Attributes: As shown in Table 2, the women in the treated group and their husbands were older than

Table 1 Domain of maternity anxiety score

-
- Course of pregnancy
 - Fetal development
 - Influence of mother's body
(possible effects of previous illness, diet, history of smoking, or other such factors on neonate)
 - Anticipation toward childbirth
 - Expectations for the baby
 - Changes to the mother's physical appearance
 - Anticipation toward child rearing
 - Relationship with the husband
-

Note; translation by Nakajima.

Table 2 Subject attributes

	treated group (n=46)	control group (n=59)	t-test
age	31.41±3.73	26.98±3.45	*
husband's age	33.93±3.88	28.98±3.92	*
number of years married	5.39±3.31	1.53±1.51	*
weeks of pregnancy	23.09±3.16	23.63±3.07	
number of past pregnancies	0.59±1.00	0.01±0.13	*

those in the control group, and there were a greater number of years between marriage and the birth of the first child. The number of past pregnancies was also greater in the treated group. At the time of the survey, there was no difference in the number of weeks of the pregnancy, so the survey results would not have been affected by a difference in how far the pregnancy had progressed. As shown in Fig. 1, the main treatment methods for the pregnancy in the treated group were pharmaceutical therapy (38.6%), artificial insemination with husband's semen (AIH; 13.6%), in vitro fertilization-embryo transfer (IVT-ET; 27.3%), hydrotubation (6.8%), and surgical treatment (6.8%).

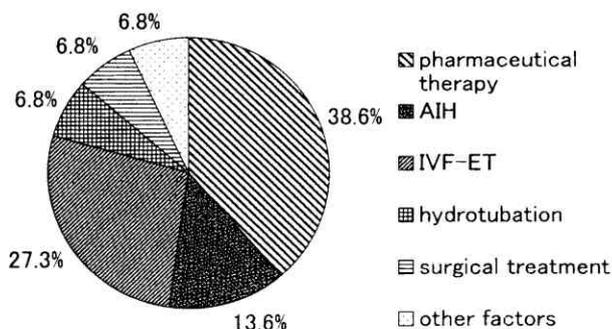


Figure 1. Current primary sterility treatment

Anxiety during pregnancy: The tallies for the anxiety scale are shown in Fig. 2. There was no difference in the anxiety score; women with unaided pregnancies showed the same level of anxiety as the women whose pregnancy resulted from sterility treatment. A comparison by domain of the maternal anxiety score is shown in Fig. 3, and the correlations between the domains are shown in Tables 3 and 4. In the treated group there was significantly less anxiety toward changes in physical appearance. Moreover, in

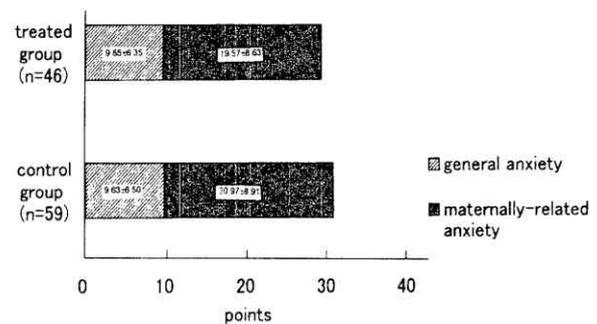


Figure 2. Anxiety score

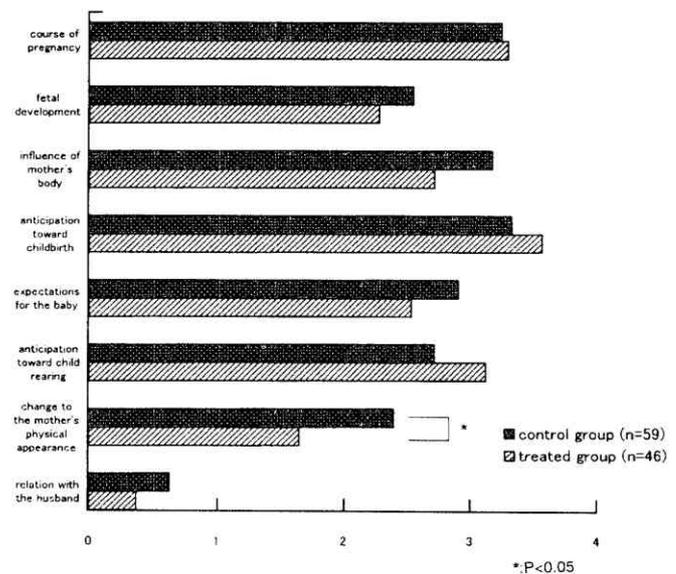


Figure 3. Maternal anxiety score (comparison by domain)

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Table 3 Interrelation between each domain of maternity anxiety (treated group)

	(n=46)						
	1	2	3	4	5	6	7
1. Fetal development	.09						
2. Expectation for the neonate, influence of mother's body	.29	-.01					
3. Anticipation toward childbirth	.54**	.03	.44**				
4. Expectations for the baby	.47**	-.03	.55**	.33*			
5. Anticipation toward child rearing	.27	.26	.35*	.41**	.30*		
6. Changes to the mother's physical appearance	.05	.04	.25	.21	.21	.23	
7. Relationship with the husband	.17	.07	.15	.17	.25	.47**	.25

: $P < 0.01$, *: $P < 0.05$ **Table 4 Interrelation between each domain of maternity anxiety (control group)

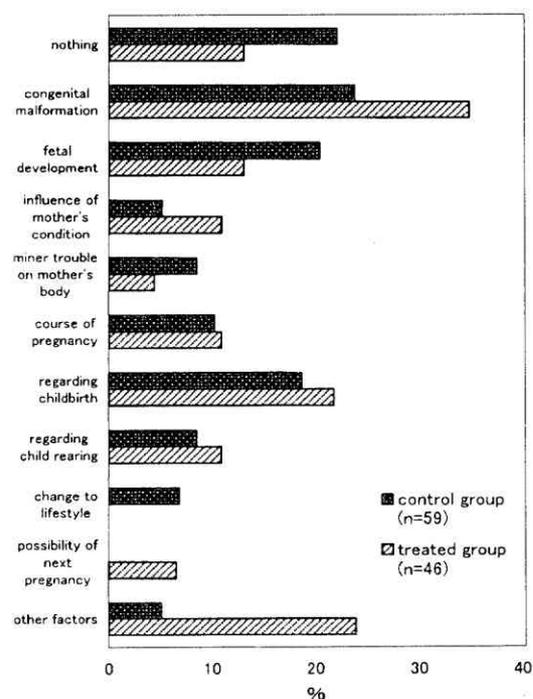
	(n=59)						
	1	2	3	4	5	6	7
1. Fetal development	.29*						
2. Expectation for the neonate, influence of mother's body	.28*	.32*					
3. Anticipation toward childbirth	.49**	.33**	.34**				
4. Expectations for the baby	.43**	.20	.29*	.34**			
5. Anticipation toward child rearing	.51**	.47**	.36	.42**	.35**		
6. Changes to the mother's physical appearance	.33*	.32	.21	.28*	.36**	.36**	
7. Relationship with the husband	.28*	.33*	.02	.05	.19	.14	.13

**: $P < 0.01$, *: $P < 0.05$

the treated group anxiety toward changes in physical appearance tended to be lower than anxiety toward "fetal development" ($p < 0.1$), and was significantly lower than anxiety for the other 7 domains ($p < 0.5$). In addition, no correlation was seen between the score for changes in physical appearance and those for the other domains of maternal anxiety.

Next, the correlations between scores for each maternal anxiety domain were compared. In the control group, with the exception of "relationship with husband," a correlation was seen between nearly all domains. Against this, in the treated group no correlation was seen between "fetal development" and "changes in physical appearance" or any other domain. Moreover, while "relationship with husband" was correlated with "course of pregnancy" and "fetal development" in the control group, a correlation between "relationship with husband" and "expectations for the baby" was a characteristic of the treated group.

The results from the self-report questionnaire on type of anxiety are shown in Fig. 4. First, the anxiety described on the questionnaire was classified into 10 groups, including "none." Any responses that could

**Figure 4.** Concern faced

not be classified were put in a "miscellaneous" group. None of the women described two or more items of anxiety belonging to the same group. Next, the proportion of women describing each type of anxiety is shown as a percentage for each group of anxieties. As shown in Fig. 4, the results for the type of anxiety described in the part of the survey form in which the women freely wrote their feelings correlated with the results of the 8 domains of maternal anxiety on the anxiety scale. In addition, anxiety was seen in the control group toward the changes in lifestyle that accompany pregnancy and child rearing. In the treated group, there was anxiety toward the possibility of the next and subsequent pregnancies.

5. Discussion Since among the treated group there was a longer period from marriage to the birth of a first child, these pregnant women and their husbands were older at the time of the child's birth. The number of past pregnancies was also higher in the treated group, probably because of a higher number of subclimical abortion after in vitro fertilization-embryo transfer.

Anxiety was felt for differing reasons in the subjects. Anxiety over the changes in physical appearance was significantly lower in the treated group, and the score for other domains also tended to be lower. No correlation was seen between score for the "changes in physical appearance" domain and the scores for other domains of maternal anxiety. Thus, changes in physical appearance from pregnancy are not thought to be a strong factor in maternal anxiety in the treated group. Nor was there a correlation between the "fetal development" domain and the other domains in the treated group, which demonstrates that anxiety toward the position and size of the fetus exists separately from anxiety toward the course of pregnancy or delivery and child rearing. This would indicate that while women in the unaided pregnancy group believed that if they were healthy and the course of the pregnancy good, then their fetus was also developing normally, the women who had received sterility treatment felt anxiety about the development of the fetus even if the pregnancy was following a normal course. Moreover, the domains of "relationship with husband" and "expectations for the baby" were correlated in the treated group, indicating

that they understood child rearing to be a job to be undertaken together with their husband.

In Japan, woman's own mother becomes main helper in pregnancy, delivery, and child rearing, rather than her husband who is also experiencing this process for the first time. However, from the above findings it would seem that in pregnancies following sterility treatment support from the husband for the expectant mother, in the form of facing the process of pregnancy, delivery, and child-rearing together as partners, can prevent the increase of anxiety in the mother. To do this, the husband should receive training from the start of the pregnancy in how to provide support for his wife throughout the pregnancy and delivery, as well as training in child-rearing techniques.

In pregnancies following sterility treatment the mean age of the couple at the time of the first birth is significantly higher, so the age of their parents is probably also higher. The couple may therefore not be able to expect support from their own parents in the above process. As the present study was only a limited survey of anxiety during pregnancy, this point remains a topic for further study.

6. Conclusion In the present study, the following results were obtained with regard to anxiety during pregnancy in women who had received sterility treatment. 1) There is no difference in the level of anxiety during pregnancy between women whose pregnancy follows sterility treatment and those who have unaided pregnancies. 2) In pregnancies following sterility treatment, the woman is anxious about the state of fetal development even if she is healthy and there is no problem with the course of the pregnancy. Thus, the development of the fetus must be sufficiently explained to women who become pregnant after sterility treatment. 3) In women who become pregnant following sterility treatment, anxiety toward fetal development is connected with their relationship with their husband. By actively supporting the woman during pregnancy, delivery, and child rearing, therefore, it is thought that the husband can help to reduce anxiety in the wife. Prenatal education for the couple is thus important in cases of pregnancy after sterility treatment.

Finally, the present survey was limited to

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anxiety felt by women in the second trimester of pregnancy only. How this anxiety will change in the final stage of pregnancy or through child rearing, and the relation between anxiety occurring during pregnancy and factors in daily life such as family relationships, were not clarified. We would like to further elucidate these points in the future, as well as approaches for women who become pregnant after sterility treatment and the nursing care for such families.

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