

Maternal anxiety and childbirth

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Summary: The repercussions of the emotional state of a pregnant woman on the course of her labour and delivery and on the state of health of the newborn have been the subject of numerous researches which have yielded contrasting results. The present enquiry was carried out on a group of 34 pregnant women, with the aim of examining the relationship between the emotional state of a woman during pregnancy, on the one hand and, on the other, the course of her labour and delivery, her psychological reaction to it, and the birth weight of her baby.

The repercussion of the emotional state of a pregnant woman on the course of labour have been the subject of much research. Various Authors have observed that, in the presence of particularly high levels of anxiety, the duration of labour may be prolonged due to the effects of psychological tension on the uterine contractions (1, 2, 3, 4, 5, 6).

To be more precise it has been underlined that the anomalies in the duration of labour are in reality to be correlated less to the levels of anxiety than to the difficulty in managing the anxiety itself (7, 8). In fact, even a tendency towards denial and repression of the anxiety might be called into question to explain the anomalies of labour and delivery.

Numerous Authors have noticed the presence of a greater number of compli-

cations in labour and delivery in women with high levels of anxiety during the course of their pregnancy, above all in the third trimester (4, 9, 10). On the other hand, no correlation emerged from other enquiries (1, 5, 11, 12, 13).

Some research has faced the problem of the relationship between maternal emotive state and neonatal wellbeing.

Body weight and Apgar score have been the variables most often used to define the condition of the newborn. It has been observed that infants born to women with particularly high anxiety levels tend to present lower birth weights in relation to control groups (10, 14, 15, 16).

Lederman *et al.* (17) reported analogously that a high level of state anxiety at the moment of delivery and a negative attitude to the pregnancy were associated with an increase of catecholamine concentration in the maternal blood, with consequent repercussions on the fetal heart rate and Apgar score.

The hypothesis of a correlation between maternal anxiety and the physical condition of the newborn is, however, not confirmed by results presented by other

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Authors. In particular Grimm⁽¹¹⁾, Standley *et al.*⁽¹⁸⁾, Beck *et al.*⁽⁵⁾ did not notice any correlation between maternal psychological tension and the Apgar score; while Ottinger *et al.*⁽¹⁹⁾ and Burnstein⁽¹⁾ reached analogous conclusions regarding the weight of the newborn.

A critical review of the literature relative to the correlation between psychological tension in pregnancy and obstetrical complications offers on the whole contrasting results; this may be due, at least in part, to the different methods used by the various Authors. Gorsuch⁽²⁰⁾ and Standley⁽¹⁸⁾ underline the frequent lack of appropriate distinction between anxiety as a transient condition and anxiety as a personality trait, and between anxiety in general and anxiety specifically related to the problems of pregnancy.

The present study was carried out with the aim of verifying the relationship between maternal anxiety and other psychological symptoms in pregnancy, on the one hand, and, on the other, the course of labour and delivery, emotional reactions to it, and the birth weight of the newborn.

SUBJECTS AND METHODS

Subjects

The subjects were 34 pregnant married women, the majority primiparae (82.4%), aged between 20-30 years (70.6%), most of whom were regularly employed (76.5%).

Instruments

The following instruments were used in our enquiry:

1) State-Trait Anxiety Inventory (STAI)⁽²¹⁾ for evaluation of the state anxiety (STAIX₁) considered as a transitory psychological state, and of trait anxiety (STAIX₂) considered as a relatively stable disposition of personality.

2) Symptom Questionnaire (SQ) (Italian version drawn up by Fava and Kellner)⁽²²⁾ for the observation of depressive, somatic and hostility symptoms.

3) Eysenck Personality Inventory (EPI)⁽²³⁾, used here exclusively for evaluation of neuroticism understood as a relatively stable disposition of character.

4) Obstetric Complications Scale (OCS) (Litman and Parmalee)⁽²⁴⁾, which includes 41 items relative to the clinical history of the pregnant woman, to the evolution of her pregnancy, to labour and delivery and to the health condition of the newborn in the immediate post partum period.

For the present enquiry we referred only to those items, relative to the delivery and to the condition of the newborn, which corresponded to the aims of our research. We took into account particularly: gestational age - birth weight - cephalo-pelvic disproportion - multiple birth - membranes ruptured prior to delivery - delivery (spontaneous, induced, cesarean) - forceps - duration of the 1st and 2nd stages of labour - intrapartum drugs - amniotic fluid - fetal presentation - knotted or prolapsed cord - placenta previa or placental infraction.

Procedures

The enquiry took place during two successive sessions. At the first, in the 8th month of pregnancy, we administered STAI, EPI and SQ.

At the second, which took place in hospital within 48 hours after delivery, STAI only in form X₁ and SQ were again administered.

The OCS was also filled in on the basis of data available from the patients' case history.

Statistical analysis

The results were subjected to statistical analysis using the χ^2 test for the data given by OCS.

The Student t test was used for analysis of the results obtained from the STAI, the SQ, and the EPI.

RESULTS

The scores obtained in the psychometric tests at the first and second sessions did not reveal statistically significant differences; immediately after delivery the emotional state of the patients did not appear to be substantially modified in relation to the 8th month of their pregnancies (Tab. 1).

With the aim of revealing possible correlations between maternal anxiety on the one hand, and the complications of delivery and emotional reactions to it on the other, the sample was successively subdivided on the basis of the scores relative to trait anxiety. Thus two sub-groups were formed

Table 1. — Results obtained in the psychometric tests from the whole sample in the 1st and 2nd session (X_1 : State Anxiety; X_2 : Trait Anxiety; N: Neuroticism; D: Depression; S: Somatic Symptom; H: Hostility).

		1st Session (34 subs) \bar{X}	2nd Session (34 subs) \bar{X}	T	P
STAI	X_1	39.9	38.8	—	n.s.
	X_2	41.7	—	—	
EPI	N	11.9	—	—	
SQ	D	4.03	5.51	—	n.s.
	S	7.03	7.8	—	n.s.
	H	2.09	3.4	—	n.s.

consisting of the patients who had obtained higher or lower scores in the STAI X_2 with respect to the average of the whole group ($\bar{X} = 41.7 \pm 11.27$):

— group A, with high level anxiety, consisting of 16 patients with STAI X_2 scores over 41;

— group B, with low level of anxiety, comprising 18 patients with STAI X_2 scores lower than or equal to 41.

Comparison between the two groups at the first sessions showed significant differences in all the variables considered. Group A, in fact, presented higher scores in the scales of neuroticism ($p \leq 0.001$) and state anxiety ($p \leq 0.01$).

Significantly higher scores were also noted in the scales of depression ($p \leq 0.001$), somatisation ($p \leq 0.01$) and, although less markedly, hostility. The psychometric data noted soon after delivery did not show any significant differences between the groups for any of the psychological variables considered. The disappearance of the difference present at the first session was due to the different tendency of the psychological indices in the two groups; in fact, while the psychological tension tended to be slightly reduced or unmodified in the high trait anxiety group, in the group with less anxiety a slight increase

in state anxiety, depression, somatic and hostility scores occurred (Tab. 2).

With regard to the course of labour and delivery noted by OCS, 58.8% of the patients presented at least one of the complications considered. These complications were observed in particular in 8 patients of group A and 12 of group B, and were distributed analogously within the two groups; no significant differences were revealed between the two groups with regard to the presence and distribution of single complications (Tab. 4).

Such homogeneity between the two groups was maintained even in such variables as the duration of the 1st and 2nd stages of labour and the birth weight of the newborn which, on the basis of literature, seem to be particularly influenced by the emotional state of the mother.

The absence of statistically significant differences in these variables remained even when comparison was made only between those patients who had obtained in trait anxiety relatively higher scores (group A'; 6 Ss) or lower scores (group B'; 4 Ss) than the average of the sample by a deviation standard (STAI X_2 : $\bar{X} = 4.7 \pm 11.27$) (Tab. 5). In the sub-group of women with particularly high level anxiety however, the birth weight of the newborn was lower compared to the sub-group with lower level anxiety.

DISCUSSION AND CONCLUSIONS

With regard to evolution of the psychological state in the third trimester of pregnancy and during the first post partum days, the results previously reported, relative to the whole sample, reveal that, in the group of women we studied, no notable reduction of anxiety levels during the post partum period occurred, contrary to what has been reported by other Authors (^{25, 26, 27}).

Table 2-3. - Psychometric findings obtained in the 1st and 2nd session, in the two sub-groups of pregnant women with trait anxiety above or below the average of the whole sample (\bar{X} : 41.7 ± 11.27).

Table 2		Group A High Trait Anxiety (16 subjects) \bar{X}		Group B Low Trait Anxiety (18 subjects) \bar{X}		T	P
Ist Session							
STAI	X_1	45.6	35.1	2,7435			≤ 0.01
EPI	N	15.8	8.5	4,6573			≤ 0.001
SQ	D	6.5	2	4,0097			≤ 0.001
	S	9	5.5	2,7849			≤ 0.01
	H	3.5	1	1,9557			≤ 0.1
IIInd Session							
STAI	X_1	40.8	37	-			n.s.
SQ	D	6.7	4.5	-			n.s.
	S	8.3	7.5	-			n.s.
	H	3.6	3.4	-			n.s.

Table 3

Group A		1st Session (16 subs) \bar{X}	2nd Session (16 subs) \bar{X}	T	P
STAI	X_1	45.6	40.8	-	n.s.
SQ	D	6.5	6.7	-	n.s.
	S	9	8.3	-	n.s.
	H	3.5	3.6	-	n.s.
Group B		1st Session (18 subs) \bar{X}	2nd Session (18 subs) \bar{X}	T	B
STAI	X_1	35.1	37	-	n.s.
SQ	D	2	4.5	-	n.s.
	S	5.5	7.5	-	n.s.
	H	1	3.4	-	n.s.

However the results achieved in psychometric tests before and after delivery by the two sub-groups of women, created on the basis of the scores of trait anxiety, indicate that state anxiety diminishes sensibly, even if not statistically appreciably, in pregnant women with high anxiety levels in the third trimester of pregnancy (Tab. 3).

On the contrary in women with already low anxiety levels a slight increase in state anxiety, depression, somatic symptoms and hostility is observed, probably due to the fact that the second session took place on the first or second day after delivery, in a hospital environment. Emotional perturbation in the immediate post partum period could be a consequence of the feeling

Table 4. - *Course of labour and delivery revealed by the OCS.*

	No.	%		
Subjects with complications	20	58.8		
Subjects without complications	14	41.2		
Total	34	100		
Complications	Group A High Trait Anxiety No. subjects	Group B Low Trait Anxiety No. subjects	χ^2	P
Gestational Age (<37 wks. >42 wks.)	1	3	-	n.s.
Birth weight (<2500 grs. >4500 grs.)	0	0	-	n.s.
Average newborn weight	3503 grs.	3474 grs.	-	n.s.
Cephalo-pelvic disproportions	1	2	-	n.s.
Multiple birth	0	0	-	n.s.
Membranes ruptured prior to the delivery	0	1	-	n.s.
Delivery:				
Induced	3	3	-	n.s.
Cesarean	2	4	-	n.s.
Forceps	0	0	-	n.s.
1st stage of labour (<3 hrs. >20 hrs.)	2	2	-	n.s.
Average time, 1st stage	5 hrs. 28 mins.	6 hrs	-	n.s.
2nd stage of labour (<10 mins. >120 mins.)	0	0	-	n.s.
Average time, 2nd stage	33'	33'	-	n.s.
Intrapartum drugs	5	8	-	n.s.
Amniotic fluid	0	2	-	n.s.
Non-cephalic presentation	0	0	-	n.s.
Knotted cord	0	0	-	n.s.
Prolapsed cord	0	0	-	n.s.
Anomalies of the placenta	0	0	-	n.s.

of extraneousness and of the passive role that a hospital setting seems to impose on women (^{28, 29}).

The second hypothesis which this work proposed to verify was that related to the possible influence of a woman's emotional state on her pregnancy and the course of labour. As has been mentioned previously, comparison of the obstetric data between groups of women who had experienced their pregnancy with particular anxiety and those less anxious showed no

significant differences with regard to complications.

However, it should be underlined that the tendency of the small group of women with particularly high trait anxiety is to have babies whose birth weight is lower, though within the norm, than that of babies born to women only normally anxious.

The results obtained, however, referring only to a small sample, do not show strong evidence of any relationship bet-

Table 5. - *Weight of the newborn and progress of labour and delivery in pregnant women with scores of trait anxiety above and below the average of the sample of 1 ds.*

	Group A' High Trait Anxiety (6 subs) \bar{X}	Group B' Low Trait Anxiety (4 subs) \bar{X}	T	P
Newborn weight	3376 gr.	3707 gr.	-	n.s.
Duration of 1 st stage of labour	296 min.	336 min.	-	n.s.
Duration of 2 nd stage of labour	30 min.	38 min. 7"	-	n.s.

ween the psychological attitude of pregnant women and complications during delivery: they do seem, however, to support the hypothesis that maternal anxiety may influence infant birth weight.

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