



Level of Anxiety in Parents of High-Risk Premature Twins

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Abstract. We attempted to define parental anxiety in a population of parents of high-risk premature twins (mean birth weight 1.493 ± 227 kg; mean gestational age 33 ± 3.5 weeks), admitted to III level NICU. We specifically examined the following factors: gestational age of the twins, whether or not the twins had ventilatory support, pulmonary sequelae, major malformations or intra-ventricular hemorrhage, parental gender and highest level of education obtained by the parent. In the immediate pre-discharge period and a month later, a questionnaire (State-Trait Anxiety Inventory) was given to all parents of premature twins presenting for the discharge. The parents of 30 twins entered the study twice, at the discharge of their first twin (mean postnatal age 40 ± 32 days), and one month later. They included 15 mothers and 11 fathers, aged 33 ± 5.5 and 33 ± 4.2 years, and at the second evaluation 11 mothers and 10 fathers, respectively. As case-controls we examined parental anxiety of fifteen consecutive singleton high-risk prematures, with equal gestational age, discharged immediately after. Our results indicate that the parents of high-risk twin and singleton prematures present an elevated, lasting state-trait anxiety level. Pre- and post-discharge parental anxiety is more elevated (not significant) in twinning with respect to the prematurity alone. When assessed separately by parental gender, in both these groups an increased (not significant) anxiety was persistently found in the mothers. We recommend that, although neonatologists generally define the discharge of the high-risk premature based upon the acquired stabilization of vital parameters, they pay special attention to the twin group we have identified which is at increased risk for pre-discharge parental anxiety.

Key words: Assessment, Parental anxiety, Premature, Singleton, STAI-Y, Twin

INTRODUCTION

In recent years, both pediatricians and neonatologists have necessarily increased their efforts to extend the care of high-risk premature neonates to the emotional support of parents as well. Identifying and alleviating parental anxiety is beneficial to parents for additional reasons; besides enhancement of psychological well-being, a variety of inter-

ventions have been described in the pediatric literature to prevent or decrease the severity of untoward parental reactions, in the psychoemotional interest on growing infants [1, 6, 7, 10].

Multiple gestation is well known to be associated with higher rates of premature births, intrauterine growth retardation, congenital malformations, which imply a high perinatal morbidity and an increased sequelae risk for the affected premature twins. Apprehension and anxiety are thus expected in parents of NICU hospitalized premature twins undergoing medical and surgical procedures [2-5, 8, 11, 15, 18]. Unfortunately no study to date has attempted to correlate parental anxiety, per se, with the occurrence of perinatal clinical complications of high-risk twins or singletons.

In this case-control study, we aimed to identify specific predictors of pre-discharge parental anxiety in a population of parents of preterm twins undergone to third level NICU medical and surgical cares. We specifically examined the following factors: gestational age of the twins, whether or not the twins had ventilatory support, intra-ventricular hemorrhage, pulmonary sequelae, major malformations, parental gender and highest level of education obtained by the parent.

We reasoned that if any of these factors influenced the level of parental anxiety, then neonatologists who care for twins could pre-discharge identify parents at risk and attempt to attenuate or alleviate advantageously for the psychorelational growth their fears and concern.

MATERIALS AND METHODS

In the immediate pre-discharge period (< 24 hours), a questionnaire was given to all parents of premature twins, admitted from birth to the NICU at the Department of Pediatrics of Padua University, for medical and surgical cares. We used the State-Trait Anxiety Inventory (STAI) [12], which is a standard tool used to assess situational anxiety. It consists of two 20-question scores, written on a sixth grade level, and generally takes about 5-10 minutes to complete. The first part measures the current emotional state of the subject, including immediate fillings of apprehension, nervousness, and worry. The second set of questions measures the subject's personality trait or how the person generally feels, and is used to compare baselines between groups. The STAI is the leading measure of personal anxiety worldwide, and has been used and validated by health professionals in a variety of different settings. From 1989 is available an Italian edition, adapted by Pedrabissi and Santinello [9].

Usually in our NICU the parents are free to approach their babies during the day, and even they may speak to nurses or physicians on the baby clinical conditions evolution. Parents were separately asked to complete the questionnaire while they were visiting their child in a holding room before the discharge from the NICU. The questionnaire was offered to one or both parents, if present and available.

As case-controls were evaluated the parents of 15 consecutive premature singletons, equal in the gestational age, and discharged immediately after.

Perinatal characteristics of premature twins and singletons and related parental anxiety [Absolute level value, value related to parental age (T), and percentile value (%)], are reported in Table 1 and 2.

Significance of differences between two P1 and P2 were tested with the variable P1-P2/ σ 1,2 assumed to be normally distributed. Sigma (σ 1,2) is the SD of P1-P2 as estimated adopting a binomonal distribution for the single variables 1 and 2; $p < 0.05$ was considered significant.

Table 1 - Parent and twin patient characteristics. Mean \pm SD

	Twins	Controls	P
Mode of delivery			
Cesarean	14	9	< 0.05
Male/Female	8/7	5/10	
Gestational age (wks)	33 \pm 3.5	33 \pm 3.5	
Birth weight (Kg)	1.493 \pm 227	1.878 \pm 1.151	
SGA	6	2	0.05
RDS	10	10	
BPD	3	1	
NEC	1		
IVH	1		
PVL	1		
ROP	2		
Malformations	1	3	
Death of one sibling	2		
Hospitalization (days)	40 \pm 32	30 \pm 23	
Mother			
Age (years)	33 \pm 5.8	32 \pm 4.9	
Doctorate		1	
Pre-/post-discharge STAI	15/12	15/13	
Father			
Age (years)	33 \pm 4.2	36 \pm 5.6	
Doctorate	1	2	
Pre-/post-discharge STAI	11/10	11/10	
SGA, small for gestational age	ROP, retinopathy of the premature (\geq grade 3)		
RDS, respiratory distress syndrome	IHV, intraventricular haemorrhage (all grades)		
BPD, bronchopulmonary dysplasia	PVL, periventricular leukomalacia		

Table 2 - Pre- and post-discharge STAI values (Mean \pm SD, T \pm SD and Percentile) in parents of high-risk premature twins

Anxiety	State			Trait		
	Mean	T	%	Mean	T	%
TWINS						
Mothers						
Pre-discharge	40 \pm 9	51 \pm 8	56 \pm 28	38 \pm 9	44 \pm 9	48 \pm 30
Post-discharge	38 \pm 9	48 \pm 9	35 \pm 25	36 \pm 8	45 \pm 10	36 \pm 26
Fathers						
Pre-discharge	35 \pm 8	50 \pm 9	51 \pm 6	34 \pm 6	46 \pm 7	44 \pm 24
Post-discharge	33 \pm 5	48 \pm 6	49 \pm 22	33 \pm 6	45 \pm 7	40 \pm 23
CONTROLS						
Mothers						
Pre-discharge	40 \pm 9	51 \pm 9	54 \pm 26	36 \pm 8	44 \pm 8	37 \pm 26
Post-discharge	37 \pm 10	47 \pm 9	42 \pm 22	37 \pm 9	44 \pm 9	37 \pm 30
Fathers						
Pre-discharge	34 \pm 8	48 \pm 9	42 \pm 25	32 \pm 7	44 \pm 7	35 \pm 26
Post-discharge	33 \pm 6	47 \pm 6	37 \pm 26	33 \pm 7	44 \pm 8	33 \pm 28

RESULTS

Twenty-seven parents of 15 premature twins, 15 mothers and 12 fathers, and 28 parents of 15 singletons, 15 mothers and 13 fathers, participated in the pre-discharge STAI, while 21 parents in each group, 11 mothers and 10 fathers, respectively, participated in the post-discharge test.

Parent and patient characteristics are listed in Table 1.

The major significant findings are as follows: parents of high-risk premature twins and singletons were comparable in age and the highest level of education. More twins were born by cesarean section ($p < 0.05$); the birth weight of twins was much lower, and the SGA twins ($p = 0.05$) statistically more represented among prematures. Respiratory distress syndrome was equally represented among study groups, however twins were found to have higher hospitalization days, as well chronic respiratory sequelae.

The pre- and post-discharge STAI results are shown in Table 2.

Anxiety levels were persistently elevated between parents of premature high-risk twins and singletons. Pre- and post-discharge parental anxiety is more elevated (not significant) in twinning with respect to the prematurity alone, but the difference is not statistically significant.

When assessed separately by parental gender, in both these groups a higher (not significant) anxiety was persistently found in the mothers.

DISCUSSION

Apprehension and anxiety are expected emotional experiences in parents of hospitalized neonates, which may enhance if they undergo NICU procedures, as more frequently it happens for the offspring of twin gestations.

In our III level Institution almost 15 % of live-born preterm infants up to 37 gestational week are twins. Twins were found to have higher rates of hospitalization, and an increased risk of cardiorespiratory resuscitation at birth, low birth weight, hypothermia, hypoglycemia, and brain damage. Also mortality was found more often (not significant) in premature twins [16]. Consequently, as neonatologists, we tried to define if parental anxiety would be an other negative feature of complicated twinning. There are two major reasons for this. The first is to identify, quantify, and then possibly institute preventive measures for addressing parental concerns. This reason alone extends the neonatologist caretaker's role to the care of parents of high-risk prematures. A second reason for studying parental anxiety would be to determine what impact it may have on behaviour, emotions, and possible outcome of the child, for additional pediatric reasons besides enhancement of psychological parental well-being.

Unfortunately limited longitudinal studies to date have attempted to correlate parental anxiety, per se, or varying levels of anxiety with fetal and neonatal behaviour, and the development or emotional reactions of the prematures in the future ages. Regarding the effect of maternal emotions on fetal behaviour, however, classic observations proved that mothers under severe emotional stress tend to have hyperactive fetuses. Furthermore, with regard to the influence of maternal emotions during pregnancy on neonatal and postnatal behaviour, it is well known that infants of emotionally disturbed women tend to have high activity levels after birth, irritability, poor sleeping, gastrointestinal difficulties, difficult temperament, and a deviant behaviour on the Brazelton NBAS, and lower scores on Bayley Scale; even maternal state and trait anxiety were found correlated with fetal and also neonatal behaviour. A clear explanation of the findings and the underlying mechanisms is still lacking, and as a consequence other studies seem necessary [13, 14].

Our results demonstrate that parents of premature twins were especially prone to increased pre- and post-discharge anxiety. This represents an other negative, psychoemotional event for growing twin infants, and a logical reason which enhances or modify the severity of ontoward psychological reactions in parents. In this study, we did not attempt to classify parents as either "anxious" or "calm", based on a median split of their anxiety scores, and we did not investigate if anxious women have more pregnancy and delivery complications. Nevertheless, these data could help the neonatologists to identify either parents who need increased emotional support pre- and post-discharge, and those premature twins that would benefit from having their parents supported during the gestation and/or post-partum. Future studies should evaluate, in fact, prenatal and postdischarge parental intervention and its impact on the emotional and behavioural well-being of high-risk premature children.

In conclusion, we determined that parents of sick premature twins have elevated anxiety, lasting over the immediate perinatal period. We also determined that mothers of premature twins are generally more anxious than mothers of premature singletons dis-

charged from III level NICU. We suggest that, although neonatologists generally define the discharge of the high-risk premature based upon the acquired stabilization of vital parameters, they pay special attention to the twin group we have identified which is at increased risk for parental anxiety.

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