Early Human Development 87 (2011) 21–26

Contents lists available at ScienceDirect

Early Human Development

journal homepage: www.elsevier.com/locate/earlhumdev

Prematurity, maternal posttraumatic stress and consequences on the mother–infant relationship ☆

Margarita Forcada-Guex [a], Ayala Borghini [b], Blaise Pierrehumbert [b], François Ansermet [c], Carole Muller-Nix [b,*]

[a] Division of Neonatology, Department of Pediatrics, University Hospital Lausanne, Switzerland
[b] Department of Child and Adolescent Psychiatry, University Hospital Lausanne, Switzerland
[c] Department of Psychiatry, University Hospital Lausanne, Switzerland

ARTICLE INFO

Article history:
Received 5 March 2010
Received in revised form 23 September 2010
Accepted 23 September 2010

Keywords:
Prematurity
Maternal PTSD
Mother–infant interaction
Attachment representations

ABSTRACT

Objective: Premature birth is a stressful experience for parents. This study explores the links between maternal posttraumatic stress, maternal attachment representations of the infant and mother–infant dyadic interactions.
Methods: The study enrols 47 preterm (GA<34 weeks) and 25 full-term infants. The Perinatal Posttraumatic Stress Disorder Questionnaire was administered to evaluate maternal posttraumatic stress symptoms. At 6 months of corrected age, maternal attachment representations of the infant were explored and coded with the Working Model of the Child Interview. Interactive characteristics were explored in a videotaped play session and coded with the Care Index.
Results: Full-term mothers were more likely to follow a "Cooperative" dyadic pattern of interaction with the infant and demonstrate Balanced representations of the infant. Preterm mothers with high posttraumatic stress symptoms were more likely to follow a "Controlling" dyadic pattern of interaction, with more Distorted representations. In contrast, preterm mothers with low posttraumatic stress symptoms were more likely to fall into a "Heterogeneous" group of patterns of dyadic interaction, with Disengaged representations. Interestingly, in Cooperative preterm dyads, only 23% of the mothers demonstrated Balanced representations, despite rates of 69% in full-term Cooperative dyads.
Conclusion: Premature birth affects both mother–infant interaction characteristics and maternal representations of attachment with the infant. In particular, a "Controlling" dyadic pattern was associated with high maternal posttraumatic stress symptoms and Distorted maternal representations. It is important to examine the impact of maternal posttraumatic stress on the parent–infant relationship in order to plan supportive, preventive interventions in the neonatal period.

1. Introduction

Advances in perinatal and neonatal care have significantly increased the survival rates of preterm infants. Nevertheless, preterm birth is still associated with considerable childhood mortality and morbidity and represents an important public health problem worldwide. Very preterm infants, very low birth weight infants, or preterm infants with medical complications are at risk for long-term developmental, psychological, emotional or behavioral problems [1–8]. Premature birth is also recognized as a stressful and emotionally demanding experience that has long-term impact on both parents. Studies have shown that the parent's psychological experience is correlated with the quality of parental attachment representations and affects the parent–infant relationship and infant outcomes [9–14].

Most studies have explored parental experiences, specifically as persistent anxiety or depression [15–18]. Only recently has the experience of having a preterm infant been explored as a traumatic experience with symptoms that sometimes persist long after the infant's discharge from the hospital [15,19–22]. Many factors have been acknowledged as stressful factors for parents, among them the infant's immaturity and severity of medical status and the parent's emotional or psychosocial vulnerability [16,23–25].

A number of studies have reported differences in the interactional characteristics of preterm and full-term dyads. Whereas premature infants have been described as less alert, attentive, active and responsive than full-term infants, the mothers of premature infants have been described as more active, stimulating, intrusive or more

☆ Grants: Swiss National Science Foundation Grant # 32-49712.96 and # 3200B0-104230/1, Fondation pour la Psychiatrie de la Petite Enfance, Lausanne.
* Corresponding author. Pédopsychiatrie de Liaison, Av Pierre-Decker 5, University Hospital Lausanne (Switzerland) CHUV, 1011 Lausanne, Switzerland. Tel.: +41 21 314 35 37; fax: +41 21 314 37 73.
E-mail address: Carole.Muller-Nix@chuv.ch (C. Muller-Nix).

0378-3782/$ – see front matter © 2010 Elsevier Ireland Ltd. All rights reserved.
doi:10.1016/j.earlhumdev.2010.09.006

distant affectively in mother–infant interaction than their full-term counterparts [9,11,26–32]. Recently, these differences have been confirmed and the influence of maternal anxiety and traumatic stress has been pointed out, in particular taking interactional characteristics of both parties (mother and child) into account [14,33,34].

To better understand the impact of anxiety and the traumatic experience of a premature birth on the mother–infant relationship, it is important to assess their influence on mother–infant interactions (behaviors) and maternal attachment representations of the infant (thoughts). These two dimensions were highlighted in the attachment theory as the Caregiving System [35]. Situations that engender feelings of helplessness in the mother, resulting in the perception that she is unable to protect the infant, may disorganize the Caregiving System on both the behavioral and representational levels [36]. The Caregiving System could become disorganized in traumatic situations [37]. It could be modulated by factors such as life events, circumstances of the infant's birth, and the infant's temperament.

Within the context of prematurity, attachment was mainly examined from the infant's attachment perspective [27,38–41]. It is well known that a high concordance exists between mothers' representational models of their own attachment experiences and the quality of their infants' attachment [42,43], with maternal responsivity and sensitivity playing a major role in this construction [34].

In this study, we consider maternal attachment representations toward the child. Studies have explored maternal attachment representations in relation to the severity of prematurity, fear of potential loss and separation after birth; however, the results have been inconclusive. Feldman and Weller [39] found that attachment behaviors and representations were the highest among the mothers of full-term infants and declined linearly with the duration of mother–infant separation after birth. Korja et al. [40] found no differences in maternal attachment representations between the mothers of full-term and preterm infants but found differences related to the presence of maternal depression symptoms. This last finding suggests that the impact of the premature birth on maternal emotional health may be more important than the prematurity itself. In other frameworks, some researchers have shown links between "unresolved" attachment and trauma related symptoms [44–47]. Exploring the links between traumatic maternal experiences and attachment representations remains an interesting question as there is some evidence that, from a trans-generational perspective, a parent's unresolved traumatic experiences relate to the infant's attachment and, in particular, to disorganization of the attachment behavior [48].

The aim of this paper is to clarify the links between maternal traumatic reactions, the quality of mother–infant interactions and maternal representations of attachment to the infant. We first hypothesized that the mothers of preterm infants would be less sensitive in their interactions with their infants (who would be less often cooperative), relative to the mothers of full-term infants, and that they would present less often with balanced representations of attachment. Second we expected that the intensity of maternal posttraumatic stress symptoms would influence mother–infant dyadic interactional characteristics and maternal representations of attachment among "preterm" dyads.

2. Method

2.1. Subjects

During a twelve-month period (January–December 1998), all preterm infants [gestational age (GA) <34 weeks] hospitalized at the NICU of the University of Lausanne Hospital were considered for inclusion in the study. Exclusion criteria included infant malformation, chromosomal abnormalities and fetopathy, parents' psychiatric illness and/or drug abuse, and difficulty in speaking French. The total cohort was composed of 105 infants. Twelve infants died, twenty parents refused to participate, and three infants were excluded from the analysis for severe developmental problems at six months of age (two infants with cerebral palsy and one infant with severe visual impairment and mental retardation). Additionally, twenty-three parents did not return the Perinatal Posttraumatic Stress Disorder questionnaire by post. Forty-seven dyads were included in the final sample. There were no significant differences in gestational age, perinatal risk score, socioeconomic level or maternal age between the enrolled dyads and those who dropped out of the study.

Control subjects were full-term infants (FT; GA≥37 weeks) randomly recruited in 1998 at the maternity ward of the same hospital. Exclusion criteria included difficulties during pregnancy or delivery, somatic abnormalities, parental psychiatric problems, and language difficulties. In total, 38% of the contacted families agreed to participate. The control group was composed of 25 infants and their mothers, all with complete data.

2.2. Instruments

The Perinatal Posttraumatic Stress Disorder (PTSD) Questionnaire (PPQ), [19,49] is a 14-item self-rating questionnaire specifically designed for parents of high-risk infants and specific to the perinatal period. The mothers answer "yes" or "no" to each of the 14 items that relate to three components of PTSD: intrusive memories (e.g. "Did you have any sudden feelings as though your baby's birth was happening again?"), avoidance (e.g. "Did you try to avoid thinking about childbirth or your baby's hospital stay?") and arousal symptoms (e.g. "Did you feel more jumpy?"). Questions are retrospective; mothers are asked to respond concerning symptoms that appeared after the birth and lasted more than one month. The posttraumatic reactions index corresponds to the sum of positive responses. The construction of the questionnaire was based on the DSM-III-R diagnostic criteria for PTSD [50]. Scores equal to or greater than six correspond to the symptom levels required for a PTSD diagnosis [13,49]. The preterm mother population was divided into two groups: those with low PTS-Symptoms (low PTS-S; PPQ<6) and those with high PTS-Symptoms (high PTS-S; PPQ≥6).

The Working Model of the Child Interview (WMCI) [51] is a 1-hour, semi-structured interview that was developed to classify parent's representations and subjective experiences of infants' individual characteristics, as well as the parent's relationship with the infant. Developed in reference to the Adult Attachment Interview (AAI) [43], the WMCI focuses on the parent's emotional reactions during pregnancy, perceptions of the infant's personality and development, and characteristics of the relationship with the infant. The interviews were audio recorded and transcribed verbatim. Each interview was assigned to one of three main categories reflecting the mother's overall state of mind with respect to her relationship with the infant: *Balanced*, *Disengaged* or *Distorted*. Two coders, blind to the infant's perinatal risk status, scored the interviews. The inter-rater agreement was 73% (kappa = 0.58), with respect to the three-way classification (*Balanced, Disengaged and Distorted*).

The mother–infant interaction play session was videotaped and lasted for 10 minutes. The mother was asked to play freely with her child, choosing among a predetermined number of toys. This video was later coded according to the third revision of the Care Index [52] by two blinded independent coders, one of whom had been certified by Crittenden (the intra-class coefficient was 0.87 for maternal characteristics and 0.86 for infant characteristics). This coding procedure is suitable from birth to 30 months of the infant's age, is not specific to prematurity and has been used with different populations [53]. It assesses the mother's interactive behavior according to three scales (*Sensitive*, *Controlling* and *Unresponsive*) and the child's interactive behavior according to four scales (*Cooperative*, *Compliant*, *Difficult* and *Passive*). Each scale ranges