

Short Communication

The Importance of an Early Suppression of the Moro Reflex

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Abstract

The vestibular-Moro reflex connection was elaborated and it was concluded that a retained Moro reflex after the age of four months should be further investigated in order to prevent future sensorimotor difficulties.

Keywords: Vestibular-Moro Connection; Sensorimotor Difficulties; Vestibular System; Moro Reflex; Attachment; Primary Reflexes

Introduction

In a recent publication [1] we concluded that, “A delayed or partly absent sensorimotor development for an otherwise healthy infant might be a strong enough sign of an underachieving vestibular system. The significance of an aberrant Moro reflex beyond 6 months of age should not the least be an adequate reason for further enquiry.” The purpose of the present paper is to further develop this perspective, primarily by elaborating the role of the somewhat strange Moro reflex [2-4]. In order to do so we will first give a short overview of fetal development followed by some general remarks about the vestibular system. These parts will lead us toward the Moro reflex and further to its connection with the vestibular system.

Fetal Movement

Human behavior originates as early as in the 7:th week prenatally when the first reflexes are becoming active. These reflexes are avoidant reactions, total pattern responses elicited by tactile stimulation which will develop in a descending direction (head to tail) [5]. During fetal life an extended repertoire of movements emerge, possible for the fetus to execute in the amniotic fluid due to the relative freedom from gravity. These fetal movements appear to be very similar to those which the infant develops, in a descending direction, during the first year of life while conquering gravity [6].

The Vestibular System

The most important sources for neural activity are the non-adaptive sensory receptors of the vestibular system which respond to the force of gravity [7]. The vestibular nuclei are functional by the 11:th week prenatally and the vestibular system is mature by the 21st week [1]. Despite its early development the vestibular system is, according to Piontelli [7], the most overlooked sensory capacity of the fetus and there is still no consensus concerning its activity in utero. However, there are reasons to believe that the early maturation is due to movements from both the mother and the fetus itself [6]. It has been suggested [8] that vestibular functions become active just after birth, not only because the infant is exposed to the field of gravity but also because of different neuromodulating factors. Further, it is possible that the transition from the intra- to the extra uterine

environment also triggers the vestibular evoked Moro reflex [3,9].

The Moro Reflex

WT Preyer (1841-1897) was not only a physiologist and a pioneer in the field of child psychology, he was also one of the first to document infant reflexes. After his death he was credited by Ernst Moro [10] for being the first to document and describe the response [11] which has to become named after Moro himself due to his description of the ‘Umklammerungsreflex’ in 1918 [12]. Moro-like responses can be elicited from vestibular receptors by the 10:th week prenatally [9] and the reflex as such is usually present at 30 weeks prenatally and is expected to be inhibited during the first 3 to 4 months postnatally [3]. Gordon (1929) [13] as well as Rider (1972) [14] held that a persistence beyond 6 months is a sign of a brain injury or an arrested development but new data reveal that a persistence already beyond 4 months is of clinical significance and should be taken seriously [15]. It was argued by Taylor and colleges [16] that the Moro reflex could be regarded as a ‘gateway’ for the suppression of other, ontogenetically younger, primary reflexes. This suggestion is in line with our studies [17,18] which have shown the importance of primary reflex suppression in order for voluntary movements to emerge. The suggestion is also coherent with Amiel-Tison and Grenier’s comment, reported by Futangi and colleges [3], that a retained Moro reflex is likely to be a hindrance for the development of mature motor activity.

The phylogenetic significance of the Moro reflex is still unclear [2-4,9]. Suggestions using an evolutionary perspective, concerning the infant’s attachment to and communication with their caregivers, have been brought forward [4,19]. In a somewhat wider perspective these suggestions are connected to a common fear, the fear of falling [20], and to our need for gravitational security [21,22].

The Moro-Vestibular Connection

The Moro reflex is a vestibular induced reflex which we argue will have a huge negative impact on a person’s physiological and psychological development if not suppressed during early infancy. Besides what we have described above there is a risk that a retained Moro reflex will create false fears which in turn will induce stress followed up by increased levels of cortisol [23] which might contribute to difficulties to grasp information [24].

At the Vestibularis clinic we use 'Sensorimotor Therapy' (SMT) according to the method 'Retraining for Balance' [25]. At first assessment for sensorimotor immaturities in accordance with DCD (developmental coordination disorder) we have frequently identified the Moro reflex in all age groups [17,18] when using the 'Clarke and Bennett test' in erect position, adapted from Field and Blythe [26] with the modified scoring from Goddard [27].

The first movement used in SMT is a fetal movement, aiming at an enhancement of the antigravity forces of the vestibular system and an increased proximity to the caregiver [28]. This movement is very similar to the one described by Amiel-Tison and Gosselin [6, p.55]. Already after 8 weeks of performing the exercise a reduction in scoring of the Moro reflex is, in general, evident.

Concluding Remarks

From what have been reported in various studies a retained Moro reflex is detectable early and equipment for further enquiries and inventions are available. Therefore, it is time for the medical community to act in order to prevent future physiological and psychological failures for otherwise healthy humans in all age groups. Early interventions are to be preferred. A first assessment at the age of 5 years as suggested by the DSM-5 [29] is far too late.

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