

MANUAL THERAPY IN CHILDREN: PROPOSALS FOR AN ETIOLOGIC MODEL

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Manual therapy in children (MTC) is receiving greater attention. Several monographs and reviews deal with this subject¹⁻⁴. Although these publications cover the field from the viewpoint of a classic pediatric approach, discussing which diagnoses of pediatric medicine might be successfully treated by MTC, they do not furnish an independent concept for the functional disorders that we see in these children.

This article proposes such a framework through a model: the kinematic imbalances due to suboccipital strain (KISS) concept. This concept groups the symptoms and signs associated with functional disorders of the cervical spine into an entity linked to easily recognizable clinical situations. By using this concept as a term in the communication with other caregivers of infants and children, we may be able to improve the contact between pediatricians and specialists of MTC, thus facilitating the identification of those cases where the use of MTC will be most useful. The definition of a functional disorder that is caused primarily vertebrogenically enables pediatricians, physiotherapists, speech therapists, and others who address infants and schoolchildren to widen their scope of available therapeutic options and to include the "functional approach"⁵ in their therapeutic considerations.

The emphasis of this article is to present the clinical picture and some background information pertaining to the causes and course of KISS and to present a manipulation technique.

THE SPECIAL SITUATION DURING THE FIRST YEAR

Newborn infants are different from adults or even older children in many ways. With a brain weight of ± 400 g at birth (rapidly increasing to ± 1000 g at 1 year),⁶ the central nervous system (CNS) of a newborn is small and light. Moreover, its most "human" parts, the prefrontal areas, are not yet myelinated and thus unable to function properly before 2 years of age⁷ and develop until the end of the teenage years.

But even myelination does not automatically implicate complex capabilities, as several crude yet convincing tests indicate. The electroencephalogram of a newborn, if derived from the scalp of an adult would be considered⁸ "...sufficiently abnormal to indicate imminent demise." The metabolic rate at this stage is low.⁹ After birth, most of the activities of the newborn are governed by spinal and cerebellar reflexes. These primitive and unconditional reactions are gradually replaced by more complex patterns, parallel to the ripening of the pyramidal tracts and other structures of the suprapontine areas of the CNS.^{10,11}

The differentiation of the fine structures of the CNS depends on and is modified by external stimuli on various levels. These influences commence before birth and are documented on the nutritional¹² and acoustic¹³ level. Before birth, mothers report marked differences regarding the movement patterns of their babies and they are able to trace these patterns to distinctive events, that is, special food they ate or activities the mothers are performing at a given moment.¹³

There seems to be a correlation between infants which are "lazy" during pregnancy and those infants which display postural or behavioral problems during the first months.¹⁴ These children show postural stereotypes with a fixed lateral bend of the spine or a preference of hyperextension. In most cases these phenomena seem to be limited to a rather short period. Thus, it is not surprising that these cases are regarded as basically self-limiting and not in need of a specific therapy. Some papers dealing with colic hint a "difference in state regulation and control in infants with colic"¹⁵ and mention functional neurologic disorders¹⁶ in these children, whereas other factors like nutrition or allergies are mostly excluded.¹⁷

We should be aware that the infant's development, and primarily its acquisition of neuromotor competences, is intimately connected to the optimal functioning of its interface with the external world. The performance of this system depends on a multitude of components, which are beyond our influence. A few of them are accessible to therapy and one of these is the "spinal engine".¹⁸ At that stage of ontogeny, an important component of this engine is the upper cervical area.

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Sources of support: none.

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Paper submitted January 10, 2004; in revised form December 10, 2004.