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How to Follow Through Childhood The Neurological Trace of Cerebral Disorder of Perinatal Origin

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The most important task of perinatology is to recognize, and if possible, prevent serious cerebral complications caused by unfavourable perinatal conditions. The different clinical aspects of cerebral lesions have now been well identified and the correlations between morphological data from cerebral imaging and functional data from neurophysiological explorations have been established. But it would be desirable for the clinician to be able, as well to identify the clinical consequences of moderate lesions or minor lesions that come to weigh upon the future of the child.

We suggest a standardized clinical method designed to gather together all of the identifiable neurological signs up to five years of age. We do not intend here to describe the full neurological examination of a young child, but rather to describe the method by which one seeks signs that appear to be excellent markers from the early months through the pre-school years. As well as signs that remain permanent through childhood, there are other signs that are transitory and are linked to a specific stage of maturation; they also have value as clues to non specific deficiencies in the child of school age. At all ages, it is therefore important to differentiate very clearly betweent the neurological signs themselves, and the functional consequences that vary according to the stage of cerebral maturation.

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Proposals for a Standaridzed Neurological Examination

A common effort to arrive at standardized data, in relation to the stage of development, appears most desirable. It is within this optic that a structured neurological examination was proposed in 1989[1] using a standardized method to elicit the signs and evaluate their severity; a simple and analytical method, with good agreement among the observers, one that dose not call for interpretation, and thus avoids diagnostic categories. Since the neurological examination depends upon the child's age, one must obviously take it into account. From birth to 9 months, the evolution is so rapid that it appears reasonable to keep in mind at 9 months the presence or absence of anomalies noticed during this period. Two sets of standard can be used from 9 months :

1. From 9-17 months, a period of transition characterized by maximal passive hypotonia.

2. From 18 months to 5 years period, characterized by a greater resistance to passive stretching, that can be assimilated to a stable state.

The list of clincial findings and the norms for codification are proposed for a neuro-motor examination that is identical from the first months to the age of 5. To integrate these findings, describing the neuro-motor domain within the framework of the neurological description of the child, four other items must be coded in parallel: the neurosensory data, data from the neurobehavioural examination, cephalic growth, and psychomotor tests. Finally, in a non-quantified manner, the eventual functional consequences of perinatal complications other than cerebral must be gathered, since they can obviously limit the child's abilities (bronchodysplasia, nutritional difficulties following enteropathy, for example). In order to facilitiate the practice of these evaluations, we offer a *videocassette that describes each procedure constituting the neuro-motor examination, and illustrates abnormalities in pathological childen from 1 to 4 years of age.

Conclusion

The ability to demonstrate clinically, each ring of the lesional continum is not a simple intellectual game. The benefits expected from this methodology can be summed up from several points of view:

1. The perinatal team cannot rely only on the mortality and severe morbidity results to make their daily decisions on appropriate therapies.

2. Epidemiologists, to progress in their correlations, need quantified data that is reliable and can be compared. No collaborative project can be worthwhile without this standardized gathering of data.

3. Neuroanatomists and neurophysiologists have the right to expect from clinicians data precise enough to permit useful correlations.

4. Those responsible for public education, where appropriate decisions must be made for dealing with children with learning difficulties, with or without motor handicaps, have the right to expect accurate definitions of the different groups, for a better rationalization of the options.

5. Finally, and most importantly, the interest of the children and their families in having a head, a preventative outlook for the future whenever possible, insofar as special care or special teaching techniques may prove all the more effective when proposed early.

Reference

1. Tison CA, Stewart A. Follow up studies during the first five years of life : a pervasive assessment of neurological function. *Arch Dis Child* 1989; 64 : 496-502.

**This video can be ordered from :* UCL Images. University College, Cleveland Street, London W1 P6 DB. Amiel Tison C, Stewart A. The Neuromotor Assessment During the First 5 Years of Life. Price : £ 50 in-cluding postage, packing and assessment guide.