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Cerebral palsy

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The term "cerebral palsy" brings together a number of widely different syndromes, whose only common feature is a disorder of movement and posture. By definition, this is due to abnormality of the brain arising before it has reached maturity: abnormality of a transient or progressive nature is excluded. In a few children the motor disorder of cerebral palsy is the sole disability but more often it is associated with others such as mental subnormality, epilepsy, defective sight or hearing, learning disabilities of organic origin and personality disorders. Assessment of the total disability is thus a formidable task requiring the co-operation of many disciplines and the use of a wide variety of diagnostic procedures.

In the infant the major motor manifestations of cerebral palsy are usually absent because the deviant patterns emerge gradually as the result of maturation of an abnormal nervous system. Spasticity, for example, is often not apparent before the age of 1 year, while athetoid movements may not be seen before 1½ to 2 years and ataxia sometimes even later. The emergence of these major motor patterns is correlated with maturation of the brain, from primarily brain stem level at birth to higher levels of cortical function later. Signs of abnormal function may be recognized early, however, as abnormalities of muscle tone, delayed development, and persistence of infantile postural reflexes. The diagnosis of cerebral palsy should therefore be made before recognition of the major motor type is possible.

In the young infant, there may be feeding difficulties or other abnormal behaviour which alert the doctor to the possibility of cerebral palsy. Unusual degrees of floppiness or stiffness in certain positions, sudden changes in tone creating problems for the mother in dressing or bathing the baby and so on, may arouse suspicion early. Differential diagnosis at this stage may include cerebral tumour, hydrocephalus, craniosynostosis, spinal cord lesions, metabolic and endocrine defects, degenerative disease of the brain, muscle diseases, effects of poisons and, last but not least, variations of development in normal children. Since some of these conditions require urgent treatment and others may be made worse by injudicious interference, the child should be seen at a general paediatric clinic before the presumptive diagnosis of early cerebral palsy is made.

As time passes and the motor disability becomes more evident, its main characteristics can be recognized. In spasticity, the stretch reflexes are exaggerated, with lower than normal threshold, the tendon reflexes are increased, ankle clonus appears early (a useful clinical sign) and there is an increasing tendency to contractures. In athetoid forms of cerebral palsy, inco-ordinated and uncontrolled movements gradually appear and increase, at first as fine movement of extremities and ultimately as slow writhing movements of the limbs and trunk. Abnormal posturing and varying degrees of muscle tension commonly develop.

In ataxic cerebral palsy there is incoordination of muscle action. This of course is present to some degree in all forms of cerebral palsy, but to be called "ataxic" it must be of cerebellar type, with tremor, hypotonia, and other cerebellar signs. Once the major motor disorder has been identified, it may be used as a convenient label for classifying the patient's disability. It must be remembered, however, that mixed disorders are not at all uncommon and too great a degree of rigidity in classification is undesirable.

The multiplicity of other disabilities commonly associated with cerebral palsy and the great variety of possible combinations make the task of assessment a complex one demanding the resources of a multi-disciplinary team. The

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purpose of assessment is to identify and define the child's assets and liabilities, to consider his needs and to try to find the most practical and effective ways in which these needs can be met. Some are common to all children—the basic elements of nutrition and protection; an environment which encourages learning by graded experience; education suited to age and ability; and social contacts which will permit normal emotional maturation. These needs must be satisfied but, because the child is handicapped, provision may have to take special forms. In addition, the presence of a disability is likely to produce certain other needs. Some of these arise directly from the disability itself—for example, the need to devise a treatment programme specifically for the underlying condition. Others stem from the fact that the child is handicapped and are therefore less specific—for example, the provision of transport.

Remedial measures have to be considered early, because they offer the possibility of reducing the extent of the disability and consequently of modifying the child's needs in other areas. It is not so much a question of rapid and substantial reduction in disability as of planning a continuous programme of management which will require constant modification in the light of progress.

In infancy, the means of treatment must be appropriate to the child's and his family's total circumstances. The aims are to induce good patterns of movement and to influence any abnormal movement tendencies that have emerged. Home developmental guidance techniques should be introduced as early as possible. Patterned movements, both gross and fine, body control, and speech must all be encouraged. The parents must be given appropriate support and guidance and the infant provided with suitable sensory experiences. In the pre-school child, physical and occupational therapy helps the child to advance to higher levels of function and allows continuing social integration. Orthopaedic aids, such as bracing, splinting and special apparatus, and the use of drugs, may be helpful in a minority of children. From about the age of school entry, an educational programme is designed to suit the child's intellectual and physical abilities. Lower limb surgery to aid mobility and upper limb surgery to assist manual dexterity may be indicated at this stage. However, the usefulness of such operations as tenotomy or arthrodesis cannot be considered until it is known how far general management, physiotherapy and other techniques will prevent the development of conditions requiring surgery.

The primary reason for treatment is to improve and extend function and any decision for or against the more demanding or time-consuming methods should take account of whether the results will be worthwhile in the long run. Physical therapy must not be considered separately from all the other aspects of the child's upbringing. The overall aim is to make the best of his potentialities and therefore attention cannot be confined solely to his known abnormality. Moreover, we should remember that treatment of disabilities constantly reminds the child that he is disabled, whereas the aim is to try and make him forget. Management must include an evaluation of the consequences of therapy in terms of the child's total progress as well as of improvement in neuromuscular function. This may well show that a few extra degrees of movement in a joint are not worth the amount of school absence entailed, or that occasional epileptic seizures are preferable to blunting of intellectual function by drugs.