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TREATMENT OF CEREBRAL PALSY

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In 1862, Little¹ described a group of children suffering from spastic paralysis. Most of them were thought to be hopeless idiots, although it appeared worthy of mention that some of the children showed evidence of normal intelligence. The possibility of treatment was not considered.

Since that time, however, many patients have benefited by treatment for cerebral palsy.

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The aim in treatment is not the same as in other diseases in which the physician attempts to cure the patient. In cerebral palsy the aim is to help the patient, but in very few cases is complete normalcy obtained. Some patients can be taught self help such as feeding and dressing, which may be their only barriers to independence. This independence having been established, several normal persons, formerly in constant attendance on the patient, may be freed for more profitable work.

Because of its nature, several types of specialists are interested in this disease. The neurologist, the orthopedist, the internist, the pediatrician, and the physiatrist* all find aspects of such cases coinciding with their respective fields. Interesting possibilities of treatment are offered by the neurosurgeon,² and others may add to the knowledge of the condition.

The physiatrist maintains close association with agencies and therapists such as social service and speech therapists, physical therapists, and occupational therapists, and is therefore in a position to coordinate treatment of the patient. Easy access to these fields is almost essential to the management of cerebral palsy, as is the opportunity to consult with other medical specialists in questionable cases.

The importance of the problem of cerebral palsy is indicated by the frequency of its occurrence. According to various statistics it is estimated that in a city of a million there are between five and eight hundred treatable patients under the age of 20.³ The number of treatable cases represents only a little over one-half the total number of children born with the disease.

Diagnosis Imperative in Treatment

Recognition of cerebral palsy is frequently an easy task. The differential diagnosis of the types, however, is more complicated. For the purpose of treatment cerebral palsy is divided into three major types: (1) spastic, (2) athetoid, and (3) ataxic.

In the spastic type the child suffers from loss of nervous tissue in the motor areas of the brain or in the tracts leading from those areas. The resulting clinical picture is muscle imbalance. Individual muscles may be spastic, flaccid, normal, tight, or weak. There has been much written on the anatomic basis of these neuro-muscular defects. The essential factor is realization that they may all occur in the same patient in any combination, and that recognition of the spastic type depends upon the finding of a stretch reflex in some of the involved muscles. This sign is

*At its last annual meeting the Council on Physical Medicine voted to sponsor the term "physiatrist" as the designation for the physician specializing in Physical Medicine. J.A.M.A. 131:34 (May 4) 1946.

pathognomonic of this type of cerebral palsy. Other neurologic evidences of the spastic type are absence of skin reflexes and a positive Babinski sign, indicating defects in the pyramidal system.

Cerebral palsy of the athetoid type is frequently mistaken for spastic paralysis because of the presence of reflex muscular tension by which the patient attempts to eliminate excessive motion. This phenomenon may easily be taken for the spastic stretch reflex. It is most essential that these types be distinguished because of the great difference in treatment of the two. The classical case of cerebral palsy of the athetoid variety is characterized by tremor, choreiform, or athetoid movements, which may be general or localized. The absence of stretch reflexes, the ability of the examiner to shake the tension out of a part, and the absence of pathologic reflexes, indicating pyramidal tract lesions, all aid in establishing a diagnosis of athetosis.

The spastic and the athetoid groups comprise about 80 per cent of cerebral palsy incidence.⁴ Part of the remaining cases are of the ataxic type, the balance consisting of mixed types. Ataxia is usually attributed to lesions in the cerebellum or its efferent tracts. The ataxia may be general, as is the usual case, or localized. It is identified by the patient's inability to orient himself in space without visual aids.

Plan of Classification and Treatment

There are various technics by which a plan of treatment can be formulated. Most workers believe that a definite plan should be established when the patient is first seen. At the Cleveland Rehabilitation Center we attempt to accomplish this in the following manner. The patient is admitted to the Center on the recommendation of any private physician or clinic, the diagnosis usually being made before the patient comes to our attention. However, in many cases, the exact type of cerebral palsy is left for us to determine. Upon the first examination an attempt is made to establish a specific diagnosis, but if there is any doubt this can be delayed and the patient put on a two-week trial of intensive treatment and observation. During this time the therapists can observe the patient and assemble valuable data which are helpful in establishing a definite diagnosis as to the type of cerebral palsy present and the mental ability of the child as well as the actual physical handicap.

At the end of the two-week period the case is again reviewed by the physiatrist in a conference with the therapists, psychologist, and medical social worker. After this review it may be necessary to have psychologic testing to estimate the child's level of intelligence or referral for audiometric testing and refraction to further aid in diagnosis and determination of treatability. Orders are given for physical therapy, speech ther-

apy, and occupational therapy, the specific orders decided according to the child's greatest need. This plan is flexible and may be revised at re-check examinations, which are made every six to eight weeks. Surgical procedures, splints, and braces are included in the general plan of treatment at this time.

Treatment

Spasticity is a condition involving individual muscles, rendering them spastic, flaccid, weak, normal, or tight. Thus, any treatment of this type of cerebral palsy must be based on a careful evaluation of the relative power of the muscles and their antagonist. Orthopedic technics employed for this type are: neurectomy, tendon lengthening, tendon transplant, arthrodesis, splinting, and bracing. Such technics are employed only after careful evaluation of the antagonist muscles. Under the direction of a physical therapist and/or an occupational therapist, the patient can then be taught to utilize to best advantage his new balance in power.

Athetosis presents the problem of involuntary motion. Muscle weakness in the athetoid type is thought to result from disuse or tension. In this type of cerebral palsy peripheral surgery is seldom if ever indicated. Braces may enable the athetoid patient to control involuntary motion, but their use should be accompanied by intensive treatment in conscious relaxation by physical and/or occupational therapy. Recent advances in neurosurgery² may offer additional means of future treatment for this type.

Treatment of the ataxic type of cerebral palsy consists for the most part in training the patient to substitute conscious balance control for the automatic balance control which he has lost. The ataxic patient is dependent on visual sensations for orientation. Braces and appliances are of no value in training. Training should be given by physical and occupational therapy.

The treatability of the various types of the disease depends upon intelligence of the patient, severity of the involvement, and associated defects such as speech, hearing, and sight, which may limit the patient's ability to express himself. These handicaps must be taken into consideration in the original evaluation of the case, and special technics in training must be employed to overcome them. The speech therapist is frequently called upon to assist with the diagnosis as well as to manage treatment of the language defect. This may include audiometric testing, since hearing loss is an important factor in some speech defects. Likewise, corrective lenses must be used to correct visual defects if indicated.

Drugs have been used in the treatment of cerebral palsy for many years. Phelps³ has recently discussed the effects of hyoscine, prostigmine,

dilantin, phenobarbital, and curare in the management of the disease. Of these drugs dilantin is of proved value in cases with associated epilepsy, and prostigmine shows considerable promise because of its ability to reduce spasticity and control athetosis, thereby rendering the patient more adaptable for training. It should be emphasized that drug therapy is in no way a substitute for planned programs of training by means of physical therapy, occupational therapy, and speech therapy.

Summary

1. Recent interest in cerebral palsy has made us cognizant of the extent of the problem and the importance of modern methods of treatment.
2. The importance of coordination of the various specialties and services concerned with the diagnosis and treatment has been emphasized.
3. The physiatrist, due to his particular training and close association with other specialized fields and services, is in an advantageous position to coordinate treatment.
4. The diagnosis and the importance of differentiation between spastic, athetoid, and ataxic types of cerebral palsy have been briefly discussed.
5. A method of comprehensive planning and several fundamental technics of treatment have been outlined.

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