TABLE V.

CLINICAL DIAGNOSIS. DIABETES AND NEURITIS. J. R. W. AGE 55 YEARS.

	Time.	Substance Injected.	Amount.	W. B. C.	Poly.	S. L.	L. L.	Trans.	Eosin.	M.
Before injection				9,000	72	19	5	1	1	2
After injection	6 hours	Patient's own blood	10 c.c.	9,200	74	17	5	1	1	2
After injection	6 hours	Patient's own blood and normal saline	5 c.c.	10,000	71	19	10			
After injection	24 hours			8,800	69	21	8		1	1
After injection	6 hours	Patient's own blood	10 c.c.	8,700	69	24	7			
After injection	24 hours			6,400	76	17	6	1		
After injection	3 hours	Patient's own blood Sodium cit. 10%	10 c.c.	7,500	79	16	5			
	24 hours later			10,800	77	22	1			

Note greater response to citrate solution.

TABLE VI.

CLINICAL DIAGNOSIS. DIABETES AND SCIATICA. J. W.D. AGE 50 YEARS.

	Time.	Substance Injected.	Amount.	W. B. C.	Poly.	S. L.	L. L.	Trans.	Eosin.	M.
Before injection				7,700	58	34		4	2	2
After injection	24 hours	Patient's own blood	20 c.c.	6,800	68	22		6	2	2
Before injection				6,000	73	22		2	1	2
After injection	24 hours	Son's blood	40 c.c.	8,275	83	9		6	1	1
Before injection				6,000	69	22		7	1	1
After injection	24 hours	Son's blood	40 c.c.	8,600	78	16		6		
Before injection				7,300	66	19		15		
After injection	24 hours	Son's blood	40 c.c.	8,800	79	15		5	1	

Pain relieved in 24 hours but no marked increase of leucocytes.

MASSAGE AND REMEDIAL EXERCISES IN THE TREATMENT OF CHILDREN'S PARALYSES. THEIR DIFFERENTIATION IN USE.*

BY JENNIE M. COLBY, BOSTON,

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SINCE, in some types of paralyses the nerves are over-stimulated and in others unresponsive—and in some the muscles are limp and wasted, in others firm and well nourished, it is reasonable to presume a difference in the use of the massage, friction, etc. And since some types lack initiation and others possess normal power of coordination that there would be ground for distinguishing between the exercises employed.

* Read before the Massachusetts Therapeutic Massage and Gymnastic Association, Inc., Boston, May 11, 1915.

Results in my own experience seem to justify this view and I differentiate as follows in applying treatment by means of massage and exercises:—

In the anterior-poliomyelitis cases, where the muscles are limp and wasted and the reflexes absent, the aim is to encourage muscular growth and development, therefore I use kneading of the light, rapid, stimulating form, friction, nerve vibration, all gently applied, and in old cases sometimes—but not habitually—percussion. The kneading and friction I apply to the limb as a whole, the vibration and percussion only locally.

In spastic cases, on the other hand, where the muscles are firm and well nourished and the reflexes exaggerated, I quite reverse my choice of procedures, omitting entirely friction, vibration and percussion, and using kneading in a modi-

fied form, viz., applying it with the palm of the hand, using deep pressure and slow movement for the limb as a whole, but being watchful to avoid producing reflex contractions. In the obstetrical arm, conditions in the early stages—usually for the first year—resemble those in poliomyelitis, and the same forms of treatment are applicable,—gentle kneading, friction and nerve vibration—the kneading and friction for the arm as a whole.

As the patient improves the movements can be increased in force and duration until they become the usual form for stimulating muscular development.

In old cases—children of several years—I begin, at once, with the routine massage, friction, vibration and percussion, such as I might use with any old traumatic case.

Passive movements of the joints for these paralytic cases are given for the purpose of keeping the surfaces of the joints in their proper relation to each other. In all old cases in each type there are sure to be more or less deformities, and then each case and each joint becomes a law unto itself. In the early stages of poliomyelitis and obstetrical paralysis there is a tendency to relaxation of the joints, and, therefore, I feel that it is safer to keep the movements well within the normal range of motion.

I believe that the anterior poliomyelitis type tends to relax whether left to itself or under treatment.

The obstetrical arm (peripheral) steadily improves in this respect, and after a few months will tolerate and even require hyper-extension. To avoid dislocations and yet not allow adhesions to form is a perplexing problem.

For the spastics it is difficult to generalize on the use of passive movements. The cases are invariably old cases when they are presented for treatment, and have deformities which must be considered individually. Frequently, where there are no visible deformities and the overlying tissues seem firm and elastic, there will be an apparent separation of the bony surfaces, which makes it seem unwise to force movement as far as the contracting muscles would indicate. Sometimes the grasp of the operator will aggravate the spasm. Often here and elsewhere the passive movement must be more or less of an assistive movement in order to prevent resistance on the part of the patient.

The question of stretching contractures is really outside the topic of "passive movements of the joints." It often happens that the joint is used as fulcrum with the distal portion of the limb as lever, but it is not always safe, and the exact condition of the joint must be considered before so using it. Sometimes it is better to stretch the tendon between the hands of the operator—when there are true contractures. If the joint is used for the purpose of stretching muscles which are attached to one or another of its surfaces, it must first be so fixed that it cannot move in any other than the desired direction of motion, and the muscle, or the contracted portion of it, must be pulled in line with its median fibers.

The active exercises offer the largest field for differentiation in applying treatment to these paralytic cases. The poliomyelitis cases need exercises to develop muscular tone rather than coördination of movement. The spastics need those which cultivate control rather than strength of muscle. The obstetrical arm requires both types, but for other reasons.

In treating the poliomyelitis cases I like to use the assistive form of the active exercises, because in this condition the patient apparently sends the first impulse unerringly to the muscle which it tries to move, and if the muscle responds the relationship continues, but if the muscle fails to respond, the effort is automatically and instantly transferred to some adjacent muscle. If, however, the limb is held in an advantageous position, and the first impulse aided to perform the intended movement, the impulse is not as readily diverted, and seems to continue to act upon the right muscle until fatigue occurs. The fatigue can also be detected more quickly through the use of the assistive movement before it becomes exhaustion or the effort is transferred to other muscles. The instant that I feel any sort of flagging I usually tell the patient that he need not try any more, but I go on with the passive form of the movement, and frequently I feel the impulse again at work of its own accord. Even when the patient has the strength to make a few contractions alone or to overcome some resistance, I still prefer the assistive form of exercises for treatment purposes. This method saves putting a relaxed joint into hyper-extension for the beginning of the movement, and proportionately more movements can be used without causing fatigue, on the principle that a larger number of light movements equals a smaller number of heavy ones. The assistive exercises also act more normally upon the antagonists and afford the most convenient way of teaching very little children.

I use very few free gymnastics in these poliomyelitis cases,—a little walking, running and dancing, a little practice on the balance-beam, the Sequin ladder and the stairs, but only in order to teach the proper form of doing such things as the patients are attempting of their own accord, not as exercise drill.

For the spastic cases the voluntary coördinatory exercises constitute the most important part of treatment. The aim of the exercises is to develop control of direction, localization and amount of effort put forth. As coördinatory exercises, they should not be of the assistive form except in order to describe the movement. They should be of great variety, of both general and special character.

In addition to the numberless formal gymnastic exercises, all sorts of everyday activities should be employed, *e.g.* for hands and fingers, buttoning clothes, lacing and tying shoe strings,

braiding hair and picking up articles from the floor or table and placing in a receptacle carried in the healthy hand, and so on indefinitely.

Simultaneous movements for arms, hands and fingers of both sides (paralyzed and normal) are of special value. Besides the regulation "symmetrical gymnastic exercises," the piano, peg board, blocks, crayons, etc., can be utilized. Useful exercises for the lower extremities are stepping over and upon objects, walking in a variety of different ways, dancing, sliding on bare floors, skipping rope, and when safe, skating, climbing and riding velocipede or tricycle.

Even when the muscles are more or less constantly in spasmodic contraction the voluntary form of contraction is desirable because exercising control over the movement reduces the spasmodic activity. The voluntary exercise should be carried to a point beyond that usually maintained by the spasm. Special exercises for the antagonists are obviously in order.

For the obstetrical arm all types and forms of exercises are needed at one time or another. During the first few weeks of life they are necessarily passive movements of the arm as a whole in imitation of the bendings and stretchings instinctively performed by its mate. Later these passive movements merge into assistive movements and the assistance is withdrawn as soon as the child has the strength and knowledge to perform the movements alone. From three months onward exercises demanding attention are important, not for the purpose of cultivating coördination, as with the spastic cases, but to arouse delayed association between the mind and that particular limb, and to localize movements for the purpose of muscular development. After three years of age, exercises for the obstetrical arm may be the regulation gymnastic arm exercises or "shoulder-blade movements," and with the addition of exercises for developing skill of hand and fingers if needed. Attention must be given to the peculiar needs of the individual. To secure exercises of attention from babies and young children requires resort to some aspect of play,—"play educates the baby," and educates the young of the dumb animals, and can and must, in order to procure the most satisfactory results, be used in applying reëducational exercises to little folks. For the tiny baby I have followed the universal custom of attaching rhymes to movements of the body: "Pat-a-cake" for the hands, "thumbkins," etc., for movements of the fingers, "measuring" for the arms, "shoe the old horse," "this little pig goes to market," and so on, with numerous "mother-plays" and "finger-plays." With older, but still little, children I have used the gymnastic movements the effect of which I desired, under some name or with some jingle which appealed to the child's imagination: "See-saw" for arm abduction, "Jack-in-the-box" for knee flexion, etc. Many of these are described in Miss Johnson's and my little book, "Educational Gymnastic Play," and some of the baby exercises which I wrote out for Dr. Thomas are published in his article on "Obstetrical Paralysis with Especial Reference to Treatment."

Daily occupations can be used as therapeutic exercises, if carefully chosen,—stirring, grinding, weaving, sewing, pounding, digging, etc. Certain toys are also useful, such as a wheelbarrow, toy tether ball and racket, jumping-jack on a string, and many another.

Games of various sorts readily lend themselves to use as remedial exercises, but to be truly reeducational they must be adapted to the special needs of the case and the individual. The scientific gymnastic movement should be the foundation for the exercise play.

The question of home treatment and activities often comes up. I feel that it is advisable for the poliomyelitis cases to have some gentle massage and friction at home, if there is any one who can do the manipulating tolerably,—briefly, fifteen or twenty minutes only at one time. The person giving the massage should be warned against holding the limb in a position which will stretch relaxed ligaments or increase deformities while giving the treatment. For the spastic cases I say *no* massage or friction *at home* and for the infant obstetrical arm, little, if any, and very cautiously, given during the first few months; after six months or a year I have allowed it, but not required it.

For the home *exercises* I reverse the order,—practically none for the poliomyelitis cases, for the spastics many and varied, for the infant obstetrics very gentle movements at first, many arm activities later.

The poliomyelitis cases, in my opinion, should not be urged to use the affected limb except when assisted. They will do more than they ought of their own accord. The child should have a rest of at least an hour a day, lying flat upon the bed or floor, with relief from all activity of the weak muscles and the drag upon relaxed ligaments.

Since I have acted upon the principle of holding back the recent poliomyelitis cases, I have seen much less deformity in my patients of this class. It requires considerable care to give a child enough normal activity without producing fatigue and deformity, but I feel convinced that for the first one or two years it is distinctly worth while to make the effort.

When the lower limbs are affected, chairs should be low enough, or provided with footrests, to allow the feet to rest flatly, with the knees at right angles and kept from separating. Tables of corresponding height should be supplied. If there is toe-drop, a strap fastened at the toe of the shoe and caught in at the top with the lacing, will keep the child from stubbing its toe and prevent the swinging at the hip, which is so likely to bring on deformity. If the shoe strings of the two shoes are tied together, giving just room for a natural length of step, the child is less likely to walk with stride-gait. The arm is sometimes best kept in a sling at intervals.

The spastic patient should have a great deal of home exercise, should be encouraged to join in the play of the other children, and the activities of the home. The majority of these patients need constant urging, as they are not inclined to use the affected limbs spontaneously. The exact performance of the movement in these cases is of less importance than the effort made, and so the exercises are more easily directed by the mother or other members of the family.

The obstetrical arm patients as infants are often too loose jointed to permit of unskilled handling, but as soon as the joint becomes firm enough to be in no danger of dislocation, the arm should be exercised by the mother, and the baby taught day by day that the paralyzed arm must do whatever the other arm does. Week by week and month by month this teaching constitutes the principal part of the home exercise—the other arm being the guide for progression. The little gymnastic exercises arranged for both arms and associated with some nursery rhyme have a certain value, and the mother usually learns them readily, and applies them with the necessary enthusiasm for holding the child's attention. As with the spastic cases, there must be constant vigilance in having the child use the arm in its play and work year after year if a perfect recovery is sought. The task is, however, far easier than with the other types, because there is less danger of over-doing and but little of wrong-doing. Less watchfulness is required with the obstetric than with the poliomyelitis subjects, and while, like the spastics they need continual urging, there is usually but one limb to consider, and only a few definite movements to require. As the disinclination to use the arm is inattention, rather than true incoördination, it is also more readily overcome.

As regards fatigue: the poliomyelitis patient is easily exhausted, even when the case is of long standing, and should always be protected against overdoing. The spastic patient is not so susceptible to fatigue, but the fatigue should be avoided as a cause of discouragement, if not as a physical harm. The obstetrical arm subject needs consideration only in regard to age,—the tiny baby must be guarded very carefully, the ten-year-old child may be allowed normal activity.

The frequency of treatment must be governed by circumstances. The interval can be shorter when the child is visited at its home than when it has to be carried to an office or hospital.

Short treatments daily by the skilled operator for the first two years would be ideal,—three times a week gives very good results, twice a week will accomplish something. Less than twice a week I do not care to consider.

Treatment should continue as long as the child responds to it, with occasional interruptions after the second year.

JOSEPH FRANÇOIS MALGAIGNE, 1806-1865.

By Wm. Pearce Coues, M.D., Boston.

Among that galaxy of surgical stars which shone on the horizon of France during the early part of the nineteenth century, none are more justly famous than Malgaigne. Perhaps the times of stress and terror through which France had just passed had something to do with the production of men of such indomitable will and determination as that possessed by the subject of this sketch. Most of the surgeons of note in France at this time rose to eminence after toils and privations almost unbelievable at the present time; the love of their profession was so great that nothing could turn them from the distant and arduous goal of their ambitions. When we seek to analyze the character of such men certain facts stand out distinctly. Seemingly common to all, we find a capacity for work and a power to overcome obstacles rarely met with at present. It seems doubtful if many of the great surgeons of the present day could put up with the hardships, privations, and often in the earlier years, actual want of some of the necessities of life, and still keep the eternal fires of genius burning bright. Thus we find Velpeau in his early years, living in Paris on nine sous a day. Fortunately for him and his art, this direful state of affairs did not last a long time. A consideration of the medical training of such men as these brings out another fact, that is, the wonderful grasp of the science of medicine as a whole that was attained in conjunction with the study of surgery. This would be a great aid to many surgeons of the present day; often too prone to fly to the internist for advice concerning matters which it should be their duty to know.

Joseph François Malgaigne was born at Charmes, department of the Vosges, on February 14th, 1806. His father also was a physician, being an officer of health of Charmes and also attached to the sixth regiment of foot artillery. Originally the family was of Italian ancestry, and there was noble blood from the mother's side of the family. The Malgaignes were not endowed with any considerable quantity of worldly goods, and the father's ambition was to have his son obtain a position as health officer similar to his own. This, however, did not by any means satisfy the young man's ambitions and led to a family disagreement later. Young Joseph went to Nancy for the first part of his medical education. From here he writes home a long and entertaining letter concerning his studies, which were rigorous in the extreme; in his enthusiasm and descriptions in this letter we get a hint of what his future accomplishments in medicine might well be. At nineteen years of age he obtained the title of officer of health, but this was not what he wished for in medical attainments, and his determination to go to Paris