Scand J Rehab Med 1 : 16–19, 1969

THE ORGANIZATION OF A NEUROLOGICAL REHABILITATION CENTRE[1]

Vagn Grynderup and Ejner Pedersen

From the Multiple Sclerosis Hospital, Ry, Denmark

ABSTRACT. A rehabilitation centre for patients with multiple sclerosis, non-traumatic paraplegia, etc., is described on the basis of 7 years' experience. The patients are treated for 1–2 months and are often re-admitted at intervals of 1–2 years. Team-work between nurses, physiotherapists, occupational therapists, the social worker and medical staff is an important feature of the management. The rehabilitation centre is closely associated with a large hospital with all specialities, from which consultants are called in and to which the patients may easily be transferred for special diagnostic and therapeutic procedures, particularly within the fields of neurology, radiology, urology and orthopaedic surgery.

The sociomedical work includes contact with the patient's home before and after admission.

For a number of years our team of neurologists has been engaged in an attempt to solve a special neurological problem, namely the treatment of cases of multiple sclerosis at a rehabilitation centre. It is a fairly specialized field, but we believe that we have gained some experience that may be of general interest. This applies particularly to the organization of the collaboration between, and the co-ordination of the services of, the Rehabilitation Centre and a large, highly specialized hospital with respect to the required diagnostic and therapeutic procedures.

The Rehabilitation Centre, which was opened 7 years ago, is situated at Ry, about 30 km from Aarhus. It has accommodation for 28 patients and serves a district roughly equal to one half of Denmark, with a population of about 2 million. The permanent staff comprises 5 fully qualified nurses, 6 auxiliary nurses, a social worker, 4 physiotherapists and 2 occupational therapists. The patients are admitted for treatment lasting about 2 months at a time, usually on several occasions at intervals of 1–2 years. They are mostly severely disabled wheel-chair patients.

The physical training programme is shown in Table I. Each patient is given active training for 5 hours daily, divided between physiotherapy (2 hours) and occupational therapy (3 hours). The physiotherapy consists of individual treatment for 1 hour and group training for the second hour, each group comprising 4–6 patients with roughly the same grade of handicap.

The occupational therapy follows the usual programme, with resistance movements and co-ordination exercises. The patients are trained in activities of daily living. This is managed by a physiotherapist and an occupational therapist, who work together at the Department for Occupational Therapy; this has the advantage that both therapists can concentrate on training the skills that the individual patient needs. Writing exercise (both handwriting and typewriting) is also given. We have a special kitchen for occupational training and shopping trips are arranged for the housewives who, though capable of doing their own shopping, have been unwilling to do it when at home.

However, an intense programme of training is not enough; in our experience the results will not be satisfactory unless the accomplishments of the patients are followed up by the nurses and ancillary staff. We have therefore organized collaboration between the nurses and therapists, who meet frequently at short conferences to discuss the patients encountering difficulties in managing the activities of daily living. In this way the nurses and ancillary staff can follow the progress of the individual patient and see how he is benefiting

[1] Presented at the 2nd Scandinavian Congress of Rehabilitation Medicine in Stockholm 1967.

Table I. *Daily programme of physical and occupational training of the patients*

A. *Physiotherapy* (2 hours daily)
Individual treatment (1 hour)
Kabat techniques, electrical therapy
Group training (1 hour)
Mattress exercises, wheel-chair exercises, gait training with and without parallel bars, indoor bicycle exercises, exercises with weights and pulleys
Learning a home programme (a copy of which each patient is given on discharge)
Outdoor games
B. *Occupational therapy* (3 hours daily)
Resistance movements and co-ordination training
Coil pottery, hand- and foot-power looms, block printing, cord knotting, light carpentry, log sawing and various games
Training in activities of daily living
Given by an occupational therapist and a physiotherapist working together
Minor alterations to clothing are made and aids given when necessary
Writing training
Hand-writing and typewriting
Training in the occupational-therapy kitchen
Shopping trips in the town

from the physical and occupational therapy. During the time outside the actual training the patients are encouraged to make use of their accomplishments. On the other hand, if a patient has mastered a certain function, the therapist may see fit to increase his tasks. It is of the greatest importance to secure intimate collaboration between the physiotherapists, the occupational therapists and the nursing staff, thereby in principle extending the training from 5 hours a day to a round-the-clock programme.

As regards the time required for such treatment, it is our experience that the patients attain a certain level of functional activity within 1–3 months beyond which no further progress is made. The first period therefore extends over about 2 months, while on the second, third, fourth and fifth admissions 4–5 weeks is usually sufficient.

Physical training, however, is only one of the types of therapy needed by our patients. Two other manifestations of their disease for which special treatment is required are spasticity and bladder dysfunction, which in this group of patients are often severe and highly incapacitating.

In the treatment of spasticity much reliance is placed on various drugs. A highly beneficial effect has been obtained with hydramitrazine (Lisidonil®) combined with chlorpromazine (7, 8), and diazepam has also been used to some extent. We find that local ice treatment (2) is very useful in combination with physiotherapy, which is facilitated by the transient reduction in spasticity produced by ice packs. In patients with spastic flexion contractures who can walk or stand, or in whom we believe it will be possible to restore these functions, we perform orthopaedic surgery on the lower limbs (6; Table II). In the most severely disabled patients who are unable to stand and have either painful flexion spasms or spastic flexion contractures which make it impossible for them to sit comfortably in a wheel-chair, we use destructive treatment consisting in intrathecal injection of phenol (11, 13).

In the neuro-urological examination of the patients we proceed according to the programme shown in Table II (1, 3, 15). The therapy is primarily medical. In the treatment of over-active neurogenic bladder we have derived great benefit from Lisidonil, and also from ganglionic-blocking agents (5, 9, 10, 14). Finally, we employ transurethral resection of the bladder neck in patients with increased resistance to micturition (4), while for stress incontinence surgical operation is occasionally done.

This extensive therapeutic programme can be accomplished, however, only if a number of spe-

Table II. *Management of spasticity and bladder dysfunction*

A. *Spasticity*
Drug therapy
Local ice-packs
Orthopaedic surgery
Resection of the obturator nerve
Myotomy of the ileopsoas muscle
Tenomyotomy of the knee flexors
Elongation of the Achilles tendon
Intrathecal injection of phenol
B. *Bladder dysfunction*
Methods of examination
Urinary flow
Cystometry
Cystoscopy
Intravenous urography
Injection urethrography
Cine-cysto-urethrography
Electromyography of the external sphincter of the urethra
Methods of treatment
Drug therapy
Resection of the bladder neck
Operation for stress incontinence

cialists work together for the benefit of the patient. We have therefore established close collaboration between the Rehabilitation Centre and the highly specialized hospital we have in Aarhus. Advantage is taken of the fact that it is actually the same neurologists that work at the Rehabilitation Centre and Aarhus Kommunehospital. When the patients have been admitted to the Rehabilitation Centre, we can, together with specialists called in from other fields of medicine, outline a diagnostic and therapeutic programme, and the patients may, without much formality, be transferred to the Department of Neurology of Aarhus Kommunehospital. Patients who are scheduled for urological and/or orthopaedic surgery are also admitted to that department, where they remain throughout their stay at the hospital and receive post-operative treatment until they can be transferred back to the Rehabilitation Centre.

Brief mention will be made of the sociomedical service. As soon as a patient has been referred to the Rehabilitation Centre, i.e. before his admission, our social worker pays a visit to the patient's home in order to get an impression of his functional capacity and his relationship with the other members of the family, and to see if his home has in any way been adapted to his handicap. The social worker prepares a report, which is available when the patient is admitted, and works closely together with the neurologists and therapists throughout the patient's stay in order to solve the various financial and practical problems facing him. The social worker may arrange for the purchase of special aids for the patient, and practical alterations of his home; in more complicated cases, he may, together with an occupational therapist, go to the patient's home and there, directly with local workmen, arrange for appropriate alterations to be made. In our experience it is a great advantage to have such problems solved while the patient is still at the Rehabilitation Centre. After discharge, the social worker forms a link between the patient and the Centre. The patient may apply to him, personally or by telephone, and an attempt is made to solve his various problems at the joint conference attended by the social worker, nurses, therapists and doctors. It is seen that close contact with the patient is maintained after his discharge.

We have tried to give an outline of the organization of our small Rehabilitation Centre. We have an opportunity to observe the patients closely in a free and easy environment, and to give them intense physical training. The institution works in close collaboration with a highly differentiated hospital, from which we can draw specialists and to which we can, with a minimum of formality, transfer the patients for more special diagnostic and therapeutic procedures. Through the Rehabilitation Centre it is possible for us to keep in close touch with the patients for years. The patients return to us at intervals for further treatment, and then we have an opportunity to check the results of the therapy and to study the course of their disease. The cost per patient-day is only about one half that at an ordinary hospital.

Obviously in the group of severely disabled patients we treat, it is only in exceptional cases that we succeed in restoring the working capacity. We shall not go into details of the results of the treatment in the various fields; those interested are referred to our previous publications (4, 9, 10, 12). In general, it may be said that we can offer these patients a course of treatment by which it is often possible to make their daily life considerably easier.

REFERENCES

1. Grynderup, V. 1966. Double cystometry in the uninhibited neurogenic bladder. *Acta Neurol Scand,* Suppl. *20,* 67–77.
2. Hartviksen, K. 1962. Ice therapy in spasticity. *Acta Neurol Scand,* Suppl. *3,* 79–84.
3. Holm, H. H. 1966. Simultaneous pressure and flow measurements during micturition. *Acta Neurol Scand,* Suppl. *20,* 87–93.
4. Jakobsen, B. E., Pedersen, Ejner & Grynderup, V. 1966. Resection of the bladder neck in non-traumatic paraplegia. *Acta Neurol Scand,* Suppl. *20,* 121–131.
5. Juul-Jensen, P. & Pedersen, Ejner. 1959. The effect of a polysynaptic inhibitor in the treatment of uninhibited neurogenic bladder. *Danish Med Bull 6,* 256–259.
6. Michaelis, L. S. 1964. *Orthopaedic surgery of the limbs in paraplegia,* pp. 6–22. Springer, Berlin.
7. Pedersen, Ejner 1962. Medical treatment of spasticity. *Acta Neurol Scand,* Suppl. *3,* 85–93.
8. Pedersen, Ejner 1964. Medikamentel behandling af spasticitet. *Nord Med 71,* 17–20.
9. Pedersen, Ejner & Grynderup, V. 1966*a*. Clinical pharmacology of the neurogenic bladder. *Acta Neurol Scand,* Suppl. *20,* 111–120.
10. Pedersen, Ejner & Grynderup, V. 1966*b*. Effect of hydramitrazine (Lisidonil) in the treatment of neurogenic bladder dysfunction. *Brit Med J 2,* 271–273.

11. Pedersen, Ejner & Juul-Jensen, P. 1962. Intrathecal phenol in the treatment of spasticity. *Acta Neurol Scand,* Suppl. *3,* 69–77.
12. Pedersen, Ejner & Juul-Jensen, P. 1964. Behandling af dissemineret sklerose. *Ugeskr Læg 126,* 645–650.
13. Pedersen, Ejner & Juul-Jensen, P. 1965. Treatment of spasticity by subarachnoid phenolglycerin. *Neurology 15,* 256–262.
14. Pedersen, Ejner & Schleisner, P. 1959. Effect of "Ciba 13.155" in the treatment of spastic paraplegia. *Acta Psychiat Neurol Scand 34,* 342–353.
15. Søgaard, B. & Razen, E. 1966. Cine-cysto-urethrography. A tool for urological classification of the patients and for selection of patients for surgical treatment. *Acta Neurol Scand,* Suppl. *20,* 105–110.

Key word: Rehabilitation

Adress for reprints:
Ejner Pedersen, M. D. Professor
Neurologisk afdelning
Århus Kommunehospital
Århus, Denmark