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**PHYSIOTHERAPEUTICAL MISTAKES IN
THE EARLY STAGES AFTER SPINAL CORD INJURY**

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PHYSIOTHERAPEUTICAL mistakes in the early stages after spinal cord injuries cause, as we know, many undesirable delays and complications concerning subsequent recovery and rehabilitation. Unfortunately these observations can be made even today, although everything is done by means of journals and lectures in which experts transmit their special knowledge to a less thoroughly trained medical staff and physiotherapists lacking in experience for better treatment for tetraplegics and paraplegics.

There are many factors which are responsible for the development of such complaints. First of all it is the admission of injured persons to a hospital which is indeed the nearest but not the best for adequate treatment of those patients. In these hospitals you will find not only a lack of special equipment but also an unskilled medical staff, who have not got enough time to attend people following acute spinal lesion.

Resulting from these primary mistakes, incorrect positioning of the paralysed patient and wrong treatment by physiotherapists who are not familiar with their work are the next steps. Consequently inadequate physiotherapy and forced passive movements of the paralysed limbs after acute lesion combine to lead to mischief which cannot be corrected later.

Practical knowledge and observations have shown that it is not only right positioning that is essential for the prevention of contractures and stiffness of paralysed joints but also a fundamental knowledge of spinal cord injuries on the part of the physiotherapist. Especially the knowledge of how to make a correct diagnosis of the level of the lesion, the exact correlation between diagnosis and loss of sensation and the psychological aspects of the injured person are crucial points for correct treatment of tetra- and paraplegic patients.

The physiotherapist should always consider swollen legs and stiffened or over-stretched joints, and above all he must not forget that even painful movements performed by himself will not be noticed by the patient on account of loss of sensation. Considering these facts, he has to pay attention to wrong alignment at the level of the fractured vertebrae in order to adjust it with a physician, preventing a gibbus which makes correct sitting in a wheelchair impossible for later times.

If these mistakes made in the early stages after injury are not considered by the medical staff, you will soon find the first clinical symptoms of a development of paraosteoarthropathy (POA) in hip and knee joints. Unexperienced physiotherapists are then apt to overlook these signs of deep thrombophlebitis, *i.e.* temperature-swollen legs, stiffness of the paralysed joints. They still carry on their forced movements because they do not know that patients have lost all sensations in this particular area.

A check of serum alkaline phosphatase (ap) at this time indicates a higher value than normal, sometimes far over 50 i.u. Ap and clinical symptoms of deep thrombosis are distinguishing marks of the development of POA. Once these severe complications have developed the injured are handicapped in their daily living activities. They are not able to fulfil the passive movements of their paralysed limbs at full range. In some cases sitting in a wheelchair is not possible at all.

Therefore everything should be undertaken to avoid POA. Consequently we do not carry out passive movements in the first 4 weeks after injury. Physiological positioning of the paralysed joints, right alignment of the broken spine, alternating supine and prone positions, deep breathing exercises and active movements of non-paralysed limbs are the only forms of treatment to be performed at this stage.

If the ap value is not more than 50 i.u. and, no signs of swollen legs or cloudy patches are seen in the vicinity of hip and knee joints on X-ray films, we start about 4 weeks after injury to bend the hip joints up to 45 degrees and later on up to 90 degrees provided that the parameters have not changed. The knees are at this moment slightly flexed with dorsiflexed ankles and the legs are supported by wedges and pillows. Thus the patient is bedded in supine position in a turning bed. That is what we call postural changes.

In this position the patient lies for about 3 to 4 hours, of course only if there is no redness or marks of skin abrasions. On the condition that the ap is still normal, we start, after the end of the spinal shock, with passive movements of the paralysed limbs in a very smooth, gentle and rhythmical way, at full range. It must be emphasised that no forced movements should be performed, especially when reflexes return, in order to prevent severe spasticity.

Current repeated ap checks and X-ray films are regularly taken. Both are important additional parameters to prevent POA. Sometimes they are the only evidence that wrong treatment is progressing. Postural changes or/and passive movements are stopped at once if the ap is increasing and its value is more than 50 i.u.

The above-mentioned statements are valid for treatment of tetraplegic patients as well. The passive movements of upper limbs, especially elbow and shoulder, should be additionally supported by splints, pillows and wedges to avoid gravitational swelling and contractures of joints in the upper limbs. Employing this method, we have seen no severe POA in the last time. It is of great importance to avoid these complications. They are very often insurmountable obstacles to the independence of persons suffering from spinal cord injuries.

SUMMARY

To avoid paraosteoarthritis no postural changes or passive movements should be done in the first 4 weeks after spinal cord injuries. Physiotherapists who are in charge of treatment of paraplegics should have a fundamental knowledge of spinal cord injuries to prevent such severe complications.

RÉSUMÉ

Changements de la position ou le mouvement passif d'un malade paraplégique est à recommander premièrement quatre semaines après avoir l'accident. Thérapeutes qui sont confiés à ces malades doivent avoir une connaissance excellente des lésions de la moelle épinière. Seulement comme ça il est possible d'éviter des dommages et la POA en faisant le mouvement passif des membres paralysés.

ZUSAMMENFASSUNG

Lageänderung bzw. passives Durchbewegen eines Querschnittsgelähmten ist erst vier Wochen nach Unfall zu empfehlen. Physiotherapeuten die mit der Behandlung Querschnittsgelähmter betraut sind müssen ein fundamentales Wissen über Syndrome einer traumatischen Rückenmarksverletzung besitzen. Nur so können nicht wiedergutmachende Schäden bei der passiven Durchbewegung der gelähmten Extremitäten, vor allem die der POA, vermieden werden.

REFERENCES

- BROMLEY, I. (1976). *Tetraplegia and Paraplegia*. Churchill Livingstone, Edinburgh.
- GUTTMAN, L. (1971). Prinzipien und Methoden in der Behandlung und Rehabilitation von Rückenmarksverletzten. Aus: KESSEL GUTTMANN-MAURER, *Neurotraumatologie*, II Bd., Urban und Schwarzenberg, München.
- NECHWATAL, E. (1972). Die Vermeidung heterotoper Ossifikationen—ein zentrales Problem bei der Frühbehandlung von Querschnittsgelähmten. *Z. Orthop.*, **110**, 590-596.
- ROSSIER, A. B. (1964). Über die Rehabilitation der Paraplegiker. *Acta Clinica*, **3**, Documenta Geigy.
- RUGE, D. (1969). *Spinal Cord Injuries*. Charles C. Thomas, Springfield.
- ZRUBECKY, G. & GASSLER, R. (1971). Die Rehabilitation traumatischer Querschnittslähmungen. *Z. Orthop. und ihre Grenzgebiete*, **109**, 709-734.