PARAPLEGICS REQUIRE INTENSIVE CARE*

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Within the last few decades it has been shown conclusively in many countries that paraplegic patients can be rehabilitated medically, socially and psychologically. To attain this result these patients require expert attention and intensive care; preferably in a specialized unit.

The honour for the revolution in the management of paraplegics rightly belongs to Sir Ludwig Guttman of Stoke-Mandeville Hospital, England. By his persistent determination he has won for most paraplegics the expectation to live independently and for some the ability to compete in Olympic Games internationally. His example has been emulated in many countries, including South Africa, and it is my honour and pleasure to mention some of the lessons we have learnt over the past 5 years at the Spinal Cord Injury Centre, Conradie Hospital, Cape Town. Having had the privilege to observe the work done at Stoke-Mandeville in 1960, I drew attention to the urgent need for such a centre for the Cape in 1962, and in November 1963 this was officially granted by the Administrator, Dr Nico Malan. This unit deals exclusively with traumatic spinal cord lesions in both males and females of all races.

MATERIAL

In 1968 Key presented a statistical analysis of the first 300 new cases seen between November 1963 and November 1966, and showed that 90% of spinal cord injuries occurred in non-White persons and that 90% of the patients were males. The details are depicted in Tables I - III. It is to be noted that 34% of spinal cord lesions resulted from motor vehicle accidents and 18% from industrial accidents, 5·3% were due to various forms of sport and 23% followed stab wounds.

TABLE I. SEX AND AGE

	< 20 yrs	*20 - 40 yrs*	*> 40 yrs*	*Total*
Male	47	140	81	268
Female	7	14	11	32
Total	54	154	92	300

Ratio male:female 9:1.
50% in 20 - 40-year age-group.

TABLE II. CAUSE AND FREQUENCY (300 CASES)

Cause	*No. of cases*	*Percentage*
Motor vehicle accident	102	34
Stabwounds	70	23
Industrial	54	18
Fights and falls	37	12
Sport	16	5·3
Medical	9	3
Gunshot wounds	6	2
Rock falls	2	1
Train	4	1·3

Since the end of 1966 a further 245 new cases have been admitted, making a total of 545 cases seen during a period of 5½ years at a steady rate of about 100 cases *per annum*. A full statistical analysis of the total of 545 cases is not yet available for publication.

*Date received: 4 June 1969.

TABLE III. NEUROLOGICAL CLASSIFICATION, INCIDENCE AND EXTENT

Level	*Total*	*Complete*	*Incomplete*
Cervical	135	49	86
Upper thoracic (T1 - T6)	48	14	34
Lower thoracic (T7 - T11)	46	21	25
Cauda equina	30	9	21
Total	360	115	185

MANAGEMENT AND RESULTS

When one considers that approximately 120 beds are available, the turnover has been good; in fact 85% of new cases are discharged within the year of admission. Ten per cent of cases are lost by death (mostly high cervical injuries) and about 5% become permanent invalids in hospital. The majority of the discharge group of 85% reach their own home and a lesser number live in a sheltered environment. In order to achieve this result intensive care is mandatory.

First Aid

The intensive care should commence from the moment of injury, and the first-aid measures must aim at preventing further damage to the spinal cord by judicious handling and transport and attention to respiratory distress in high cervical injuries. A safe rule is to convey all patients with fractured spines supine on a firm stretcher or board in the neutral anatomical position. Associated injuries, especially those with loss of blood, may cause shock and this will require attention. It is understood, too, that with multiple injuries, attention to serious lesions within the cranium, thorax or abdomen may be a priority. The surgical care of such complications, however, must not exclude the care due to a spinal cord lesion.

Early Admissions

An acute spinal cord lesion may benefit by the patient's immediate admission to a spinal unit. The chance of avoidance of the many complications, and the speedy recovery of the patient and his ultimate rehabilitation, is directly proportional to the lack of delay in commencing intensive care. Reasonably nearby cases are conveyed by ambulance, and distant cases require transport in a suitably equipped aircraft. At our unit 95% of new cases are admitted within 48 hours and the great majority within 24 hours.

Pressure Sores

Pressure sores are not part and parcel of paraplegia. They are completely preventable by the relief of pressure on the skin over bony prominences. We employ a system of turning at 2-hourly intervals 24 hours a day until the patient is allowed up. This, in the average fractured spine, requires about 3 months. Thereafter the patient is taught to relieve pressure himself when lying or sitting. Until he is rehabilitated, the medical staff have the onus to see that the paraplegic patient does not get sores; after this time it is his own responsibility. It is not generally known that the pressure causing damaged subcutaneous tissue

leading to a pressure sore needs to be operative for only several hours. The intensive care for their prevention, therefore, commences from the moment of injury and is continued indefinitely.

Limb Deformity

Limb contractures are also preventable. The concept of paraplegia-in-flexion and paraplegia-in-extension is no longer tenable, nor are these conditions seen in a paraplegic unit. Intensive physiotherapeutic treatment and manipulation of all joints from the moment of admission to hospital are essential. Passive movement for all joints below the paralysis and active movements above the lesion are instituted daily under supervision. Vigorous manipulation of the joints which lack sensation should be avoided as this may result in repeated trauma to periarticular tissues and is probably the determining factor in ectopic bone formation.

Respiratory Distress

In cervical spinal cord injuries respiration may be severely impeded and will always be partially hampered. The lower cervical lesions are usually managed by physiotherapy alone, but high lesions frequently require assisted respiration and often also tracheostomy and mechanical assistance. Associated chest injuries are not uncommon and the resultant pneumo- or haemothorax calls for the accepted methods of management.

Meteorism

It is held that spinal cord injury cases have much trouble with intestinal ileus. In our experience the hollow muscular organs (bladder and bowel) do not share the flaccidity of paralysed somatic muscles, even during the phase of spinal shock. Bowel sounds are frequently audible within hours of an acute spinal cord lesion. Nevertheless, the danger of aspirating vomitus is considerable in cervical cord lesions and it is advisable, for this reason, to institute intravenous drip therapy and gastric suction, particularly during air transport and for a period of 24 - 48 hours after admission. Care should be exercised in extending the spine in the lumbodorsal region, as this not infrequently results in obstruction to the third part of the duodenum by the mesenteric vessels. This may result in continued and excessive gastric retention which may be wrongly interpreted as idiopathic acute dilatation of the stomach.

Intravenous Therapy

The management of fluid replacement in the acute phase of a spinal cord injury follows accepted surgical principles. Surgical shock is not a major feature of an uncomplicated spinal cord lesion. Unless there has been blood loss from associated injuries, it is rarely necessary to administer blood. The volume and type of parenteral fluids required are determined by the clinical condition of the patient, with due regard to fluids aspirated by gastric suction and the output of urine. Blood transfusions are indicated in neglected cases with large septic pressure sores or advanced urinary infection. With proper intensive care, blood transfusions are seldom needed.

Urinary Tract

Urinary retention, which is inevitable in every cord lesion, is relieved by catheterization, either continuous or intermittent. We accept that intermittent catheterization will ensure the avoidance of urinary infection for a longer period than can be expected from an indwelling catheter. Nevertheless, the latter method saves much nursing time, and, when the neurological lesion is a complete transection of the cord, our experience has been that eventually all cases require continuous catheter drainage. The intermittent catheterization regimen requires catheterization at 6 - 8-hour intervals, and some degree of urinary infection is the rule after several weeks.

If the neurological lesion is incomplete, the intermittent regimen is often worth while as bladder function may recover sufficiently well to require no further assistance. It is of the greatest importance that a small-calibre catheter should be used; there is no need to exceed size F18 in an adult male or female. Large catheters in females may eventually lead to insurmountable incontinence, and in males the danger of urethritis, peri-urethral abscess, urethral diverticulum and urethral fistulae are directly attributable to large catheters.

Urinary infection and calculi are combated by ensuring a good diuresis and bladder lavage with mild antiseptic solutions. More serious infection, particularly renal, frequently calls for the administration of an appropriate antibiotic.

CONCLUSION

The over-all aim of the care of a paraplegic patient is to prevent complications. This will ensure a happy and comfortable patient who soon becomes well adjusted to his crippling disability. The foundation for the prevention of complications is laid from the outset by a well-disciplined regimen of intensive care. Ideally it embodies supervision by medical officers trained in paraplegic care, who can rely on readily available consultants in orthopaedics, urology, neurology, chest surgery, general surgery and plastic surgery. The nursing staff have an onerous task and about three times as many nurses are required as in the average surgical ward. Since 90% of paraplegics are male, male nurses and orderlies are particularly useful. The physiotherapists are needed daily and often at night to assist patients with high cervical lesions who have respiratory embarrassment.

SUMMARY

Paraplegia is a tragedy which has many medical facets, but devoted care bestowed on them yields a rich harvest of healthy, well-adjusted and independent cripples. The future of a fully rehabilitated paraplegic commences with the quality of intensive care which is given in the early period of hospitalization.

The work at the Spinal Cord Injury Centre, Conradie Hospital, Pinelands, would not have been possible without the constant assistance and encouragement from the Director of Hospital Services, Dr J. A. Hendriksz, and the Medical Superintendent, Dr D. F. Smith, to whom due recognition is gratefully recorded.

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