

**International Medical Society of Paraplegia:
Annual Scientific Meeting 1968, in Tel-Aviv**

MORNING SESSION

Chairman: Dr. A. HARDY (Great Britain)

It is with great pleasure that I introduce our opening speaker—somebody who is already known to you—it is a lady (we don't often have the pleasure of listening to ladies) with experience as a medical officer in charge of a spinal unit in South Africa: Dr. A. Key.

SPINAL CORD INJURIES

AN ANALYSIS OF 300 NEW LESIONS

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INTRODUCTION

THIS report covers the first 300 new lesions seen between November 1963 and January 1967 at the Spinal Cord Injury Centre, Conradie Hospital, Cape Town. This unit was established to admit, treat and rehabilitate all cases of traumatic paraplegia and quadriplegia from the entire Cape Province which extends approximately 800 miles north and 1000 miles east of Cape Town. The only other similar Centre of comparable size in the Republic of South Africa is at Baragwanath Hospital in the Transvaal Province.

When the Spinal Cord Injury Centre was officially opened in Cape Town in November 1963 it was established at the Conradie Hospital for several sound reasons. This hospital had a total beddage of 660 of which 300 beds served acute medical and surgical cases, and a 360-bedded section for the care of chronic and long-term cases. The hospital is designed on a plan of single-storied bungalow-type wards which are spaciouly placed between roads and lawns on level ground. This arrangement was ideally suitable for wheelchair patients.

The first medical officer appointed solely for the care of spinal injury cases assumed duty in May 1963, and the Superintendent of the hospital made available three wards which were adapted for the special use of paraplegic patients. To commence with there was accommodation for 85 males and 20 females, but 15 additional beds have since been added, giving a present total of 120 beds.

The Paraplegic Unit started with a nucleus of 45 old cases of spinal cord injury which had gravitated to the chronic sick section of this hospital and were mostly in a deplorable state. The oldest case had been there for 22 years, he has since been

¹ Medical Officer in Charge.

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TABLE I

Transportation. To indicate the Mode of Transport
 Ambulance—183 (126 from local hospitals, 57 further afield)
 Air —105
 Train —12

TABLE II
 Sex and Age Distribution

Sex	Under 20 Years	20 to 40 Years	Over 40 Years	Total
Male	47	140	81	268
Female	7	14	11	32
Total	54	154	92	300

Note—Ratio male to female 9 : 1 approximately. 50 per cent. cases in 20 to 40 year age-group.

TABLE III

Cause and Frequency of Spinal Cord Lesions

M.V.A.	120	34% or $\frac{1}{3}$ of all cases
Stabs	70	23%
Independent Accidents	54	18%
Fights and Falls	37	12.3%
Sport	16	5.3% Rugby—8; Diving—7; Judo—1
Medical	9	3%
Gunshot	6	2%
Train Accidents	4	1.3%
Rockfalls	2	1%

TABLE IV

Neurological Classification—Incidence and Extent

Level	Total	Complete	Incomplete
Cervical	135	49	86
Upper Thoracic 1-6	48	14	34
Lower Thoracic 7-11	46	21	25
Cauda Equina	30	9	21
Total	300	115	185

discharged to a hostel where he is in sheltered employment. Every conceivable complication was represented in these 45 cases.

A team comprising a neurosurgeon, an orthopaedist, a urologist, a thoracic surgeon, a plastic surgeon and an anaesthetist was appointed, each on a part-time basis. The single post of a full-time medical officer soon proved inadequate, and the establishment of full-time medical officers was rapidly increased to four incumbents.

The paramedical and nursing staff was rapidly amplified as the special needs of acute cases became apparent and at present is comprised as follows:

Nursing:

Trained nurses—a ratio of 1 to 5 as for intensive-care sections.

Male nurses and orderlies—a ratio of 1 to 2.

Student nurses—circulate through the unit.

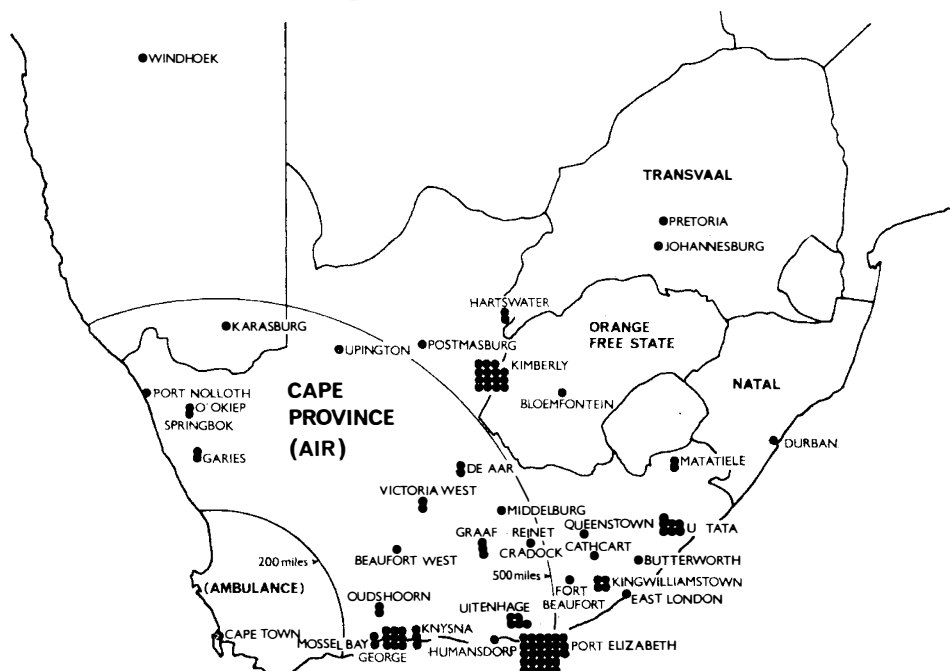
Physiotherapists—14.

Occupational Therapists—5.

Social Workers—2.

The policy from the inception of this unit was to insist on the early admission of cases, and the unit has been fortunate in having most cases admitted within 48 hours of injury. This could not have been achieved without the active and enthusiastic assistance of the Hospital Administration of the Cape Province. All hospitals in this Province are regularly circularised urging early notification and transfer of all spinal cord and cauda equina injuries. All cases within a 200-mile

Map of Airborne Admissions



radius of Cape Town are transferred by ambulance, all those further afield, with a few exceptions, are transferred by air in chartered aircraft which are equipped with special stretchers. A physiotherapist is sent on each flight to accompany the patient and supervise the transfer.

During the period November 1963 to January 1967, 300 new lesions had been admitted to the Centre. An additional 187 old cases and re-admissions for check-up, bring the total to 487 for that period. Two hundred and fifteen of the new lesions were admitted within 48 hours of their accident; an additional 52 within one week of their injury.

General Nursing Care. These cases have all been treated on Pack beds with routine two-hourly turning and lifting by a turning team of four male orderlies and a trained nurse. No pressure sores developed during the acute stage whilst on the Pack type bed and the incidence of deep vein thrombosis was four cases in this series of 300.

Plastic Repair of Pressure Sores. Although no pressure sores were encountered during the acute phase of hospital management, there were a small number which required repair by plastic surgery. The mode of their occurrence underlines the essential importance of constant vigilance, which was neglected in the following eight instances.

Three sacral sores which were present on admission in cases whose admission had been delayed by a matter of three to four days.

One trochanteric sore in a case with a Brown Sequard lesion due to a stab who was transferred 800 miles by train and was not comfortable lying on his hyperaesthetic side. He lay on his anaesthetic side and thus developed the sore.

One sacral sore, two ankle sores and one on the dorsum of a foot, all in patients in their predischarge phase of rehabilitation in a section of the ward where the patients are completely independent as a test period prior to their discharge.

Incidence of Automatic and Autonomous Bladders and Treatment. The initial management of bladder retention has been by intermittent catheterisation. This method has been most useful in incomplete spinal lesions who recover bladder function early. The use of a small (never over F16) Foley catheter has been the routine in the following circumstances:

1. When the patient is admitted with an indwelling catheter.
2. When urinary infection is obvious or suspected and does not respond to treatment.
3. When associated injuries demand special attention, *e.g.* fractured pelvis.
4. When after 10 to 14 days approximately it is clinically clear that the cord lesion is complete.

In this series of 300 cases there were a total of 159 neuropathic bladders. One hundred and fourteen patients were discharged with normal bladder function. The remaining 27 cases were early deaths with incompletely classified bladders.

Of the 159 neuropathic bladders, 133 were upper motor neurone or automatic and 26 were lower motor neurone or autonomous. Surgical intervention to decrease urethral resistance at or below the bladder neck was found to be necessary in 25 per cent. of the upper motor neurone bladders, and in 50 per cent. of the lower motor

neurone bladders. Table V divides these further into complete and incomplete lesions giving the relevant figures.

TABLE V
Classification of Neuropathic Bladders

		Ext. Sph. cut.	T.U.R.
Upper motor neurone	133	23 9	22 14
		32	36
Lower motor neurone	26	—	12 1
		—	13
Total	159		

Note—33 per cent. complete U.M.N. bladders required Ext. Sph. section. 60 per cent. complete L.M.N. bladders required T.U.R. bladder neck.

The policy of the urologist is conservative and operative procedures to reduce urethral resistance are not entertained until bladder training methods have proved inadequate. No transurethral surgery is done until at least six months has elapsed.

Eight cases were discharged with indwelling catheters for the following reasons:

1. Severe ureteral reflux.
2. High cervicals with hyper-reflexia.
3. Inefficient U.M.N. bladders.

Orthopaedic Procedures. The overall approach to the treatment of the spinal fracture in our Centre is conservative. Surgery is only undertaken under the following circumstances:

1. If the fracture is compound. (To date no such cases.)
2. If there are neurological signs of increasing cord damage. (Laminectomy—one case only.)

Open reduction and plating is not favoured by the orthopaedic surgeon attached to our Centre. The industrial accident cases, however, are the responsibility of the orthopaedic surgeon, who referred them when admitted from local hospitals, and amongst this group one thoraco-lumbar fracture had an open reduction and plating done.

Spinal fusions are only done when after a reasonable time, approximately six months, it is clear that the fracture site is unstable. Six cases have had spinal fusion done, *viz.*:

Two cervicals who after nine months showed instability at the fracture site, both very incomplete lesions.

Two thoraco-lumbar fractures unstable after six months.

One lumbar fracture with a gross lateral dislocation between 1st and 2nd lumbar vertebrae which had been reduced by the closed method but was unstable at five months and who had a complete lower motor neurone lesion.

One lumbar fracture involving the 4th and 5th vertebrae which was unstable at five months.

In this group of 300 there were 109 cervical fractures. Of these, 23 had severe fracture-dislocations or dislocations with locked facets. All were treated with skull traction and nine of these in addition had a closed manipulation under general anaesthetic. This is usually done in the ward under X-ray control. The outcome of these 23 cases is as follows:

Fourteen remained neurologically complete—five manipulated under general anaesthetic.

Three moderately incomplete on admission recovered completely—two were manipulated under general anaesthetic.

Two with only minimal neurological escape on admission recovered almost completely—both were manipulated under general anaesthetic.

Four died—one only had been manipulated under general anaesthetic.

Tracheostomies. In the group of 49 complete cervical lesions, 20 tracheostomies were performed. Eleven of these died, nine recovered and have been discharged.

Death Rate. Thirty-eight cases or 12 to 13 per cent. died during their period of hospitalisation. Thirty-four of these were complete lesions, 24 were cervicals. An additional nine cases are known to have died since their discharge from hospital and the cause of death in these nine cases is as follows:

4 toxic deaths from sores.

2 pneumonias in high cervicals.

1 ruptured aortic aneurysm.

1 pulmonary tuberculosis.

1 carcinoma of the spine which had been the cause of the paraplegia.

Discharge. Table VI indicates the number discharged and those still in hospital. The average stay in hospital has been calculated as 240 days or eight months.

TABLE VI

Discharged	254	219 home. 29 to hostels. 3 children to special schools. 3 transferred to hospitals nearer their homes in other Provinces.
Still in hospital	8	All cervicals for whom as yet no hostel accommodation is available.
Total	262	

In the group of 254 discharged:

127 wheelchairs were issued.

103 were discharged with calipers (full length, below knee, and O'Gorman springs) and crutches.

108 required nothing at all.

Out-patient Attendance. All cases that can be brought back for medical re-examination are seen at regular intervals at our out-patient clinics and are re-admitted for full routine annual investigation. Those too far afield where it is impracticable to return to the Centre are supervised by the nearest provincial hospital or a general practitioner or district surgeon and are referred back to the Centre if necessary. Out-patient attendance figures are unfortunately not available for the entire period under consideration, but a comparison of the figures for 1967 with those of the previous year show a marked increase—297 in 1967, 102 in 1966. It is encouraging to see how well the majority of the discharged patients manage once out of hospital, a relative minority return with sores or urinary complications.

SUMMARY

An analysis of 300 new lesions admitted to the Spinal Injuries Centre, Conradie Hospital, Cape Town, which was officially opened in November 1963.

Statistics given relate to the following:

1. Mode of transport to the Centre.
2. Age and sex distribution.
3. Cause and frequency of spinal cord lesions.
4. Neurological classification—incidence and extent.
5. General nursing care.
6. Plastic repair of sores.
7. Incidence of automatic and autonomous bladders and treatment.
8. Orthopaedic procedures.
9. Tracheostomy.
10. Death rate.
11. Discharges.
12. Out-patient attendance.

ACKNOWLEDGEMENTS

It is with gratitude that I express my thanks to Dr. D. F. Smith, Medical Superintendent of Conradie Hospital, not only for permission to publish these figures but for his encouragement and assistance to attend the Scientific Meeting of the International Society of Paraplegia in Israel in 1968. I extend also my personal thanks to all the members of our team who have assisted me with the compilation of these statistics.

SOME CONCLUSIONS ON A STUDY OF 365 PATIENTS WITH SPINAL CORD LESIONS

By JOSE B. CIBEIRA, M.D.

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THIS study has been carried out on 365 patients with spinal cord lesions caused by trauma or illness. They have been selected from a total of 600 patients, treated in a similar way in our institution from 1959 to 1968.

Our statistics show major accidents occurring in the age-groups between 20 and 39. Decompressive laminectomies were performed as a rule, immediately after the trauma (Table I).