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Disabilities Following Industrial Hand Injuries

DR. NAVNENDRA MATHUR, DR. K. K. R. SHARMA, SENIOR SPECIALIST
Department of Orthopaedics, E. S. I. Hospital, Jaipur

Consecutive 483 cases of industrial hand injuries attending Employees' State Insurance Hospital, Jaipur from 1983 to 1985 have been studied. The incidence of injuries is approximately 40/10,000 workers per year, caused mainly by entrapment of hand in active machine (47%), during lifting and transportation of heavy objects (28%), and handling tools (12%). These injuries are serious enough and results in persistent residual deficit in 59% of cases.

INTRODUCTION

In developing countries the industrial regulations ensuring safety to the workers are hardly implemented. As a result, the incidence of industrial injuries is likely to be high. Further, improperly organised health care delivery system often compounds the issue and leads to excessive disabilities.

Jaipur, a city of 1.2 million population having small and medium scale industries, has a population of 42,900 workers covered by the Employee's State Insurance Scheme (E.S.I.S.) There are 9 dispensaries catering to the members, who are beneficiaries of the scheme. All injured patients needing specialists care and hospitalisation are referred to central hospital.

Present study was undertaken from 1983 to 1985 to evaluate the industrial hand injuries in the central hospital.

MATERIAL AND METHOD

Consecutive 483 cases of industrial hand injuries attending the Department of Orthopaedics, Employees State Insurance Hospital, Jaipur were evaluated for the following :—

1. Incidence, type and pattern of industrial hand injuries.
2. Permanent physical deficit and disability to the workers following injuries.

OBSERVATIONS AND RESULTS

Age Incidence

The percentage distribution of the industrial workers in the different age groups is based on the available census records (Census 1981). The percentage distribution of the injured workers studied according to their age groups. It is revealed that 32 percent of the workers population belonging to 18-25 years age group had 38 percent of the injuries. The percentage of incidence is low in 36-45 years age group, wherein 23 percent of workers suffered 17 percent of injuries. The incidence of injury in other age groups is commensurate with their percentage distribution in the worker population (Table No. 1).

Table No. 1 Age incidence

Age group (in years)	Number of injured workers	Percentage distribution of workers	Percentage of injured workers
18-25	185	32	38
26-35	195	41	40
36-45	80	23	17
46 & above	24	4	5

Mechanism of Injuries

As for the mechanism of injury, entrapment of hand in active machine was the cause of

injury in 47% and during lifting and transportation of the heavy object in 28%. Rest of the patients sustained injury during handling of tools (12%) and other miscellaneous modes (13%).

Type of Injuries

The injuries are divided into simple and grievous injuries on the basis of their healing period and persistent physical deficit after their treatment.

Simple injuries (55%) were those which healed within 4 weeks, with little or no persistent physical deficit whereas grievous injuries (45%) took more than 4 weeks to heal and always resulted in persistent permanent physical deficit.

Majority of simple injuries included lacerated and incised wounds (32%) involving the index and middle fingers, whereas traumatic amputations (20%) and fractures (10%) constituted majority of grievous injuries again involving index and middle fingers (Table No. 2 & 3).

Disabilities

There is a medical board that finalises the compensation for the persistent physical deficit on the guidelines laid down by the E.S.I. Corporation and American Academy of Orthopaedic Surgeons.

Table No. 2. Simple injuries

Type of injury	Digits						Total
	Thumb	Index	Middle	Ring	Little	Hand	
Subungual Haematoma	3	6	11	3	1	—	24 (5%)
Superficial Skin Loss	9	29	22	10	4	1	75 (15.5%)
Lacerated & Incsied Wound	37	77	72	29	27	22	264 (54.6%)
Nail Loss	13	29	27	12	3	—	84 (17.4%)
Superficial Burn	—	—	1	1	1	—	3 (.6%)
Foreign bodies	1	1	—	—	—	1	3 (.6%)
Total	63	142	133	55	36	24	453

Table No. 3. Grievous injuries

Type of injury	Digits						Total
	Thumb	Index	Middle	Ring	Little	Hand	
Extensive Skin Loss	8	26	19	14	6	—	73
Fracture-closed	9	1	7	6	2	4	85
Compound	7	16	10	12	8	3	
Tendon Injury	4	18	7	8	—	—	37
Neurovascular Injury	4	5	—	—	—	—	10
Traumatic Amputation	12	61	43	31	14	—	161
Total	40	126	91	71	30	7	366

Table No. 4. Persistent physical deficit (percentage wise) in relation to body

Digit	Total digit loss	Loss distal to P.I.P. joint	Loss distal to D.I.P. joint	Loss of tip without bone loss
Thumb	30	20	—	7
Index	14	11	9	5
Middle	12	9	7	4
Ring	7	6	5	2
Little	7	6	5	2

Disarticulation of wrist accounts for 60% of disability in relation to body. Functional deficit due to sensory deficit constitute half the percentage of the loss of the part (Table No. 4).

Table No. 5. Persistent physical deficit
Total cases finalised by Medical Board—348

Disability (in percent)	Number of patients	Percentage
Nil	146	41
1	6	2
2	22	7
3	12	3
4	25	8
5	31	9
6	7	2
7	13	4
8	5	1
9	33	9
10	8	2
More than 10	40	12

DISCUSSION

The incidence of injuries is higher in younger age group (18 to 25 years) may be because of lack of training, experience, carelessness and exposure to the work which is more prone to injuries (Page, 1975).

Majority of these injuries (47%) are caused by entrapment of hand in active machine, prevention of which requires careful designing of safety devices and strict implementation of safety rules to keep them minimum. On contrast, injuries following lifting and transportation of heavy objects can be substantially reduced by the use of proper equipments, right methods and keeping the floor clean and greese free.

The incidence of injury is substantially higher in index (28%), middle (28%) and thumb (13%) because these digits are involved in three-point pinch, commonly used to face the machine or to hold the objects near the tools. Goldwyn & Day (1969) and Page (1975) found high incidence of injuries in index and thumb. 30% of cases suffered injury to more than one digits as compared to 15% cases of Goldwyn & Day (1969).

59% of these injured cases suffered persistent physical deficit (P. P. D.). 47% of cases suffered 1 to 10% and 12% suffered more than 10% of deficit.

Thus the agony suffered by the worker is tremendous both physically and economically. It also affects the national economy through compensation paid to workers, man-hour lost and the loss of production.

This can be reduced by strict implementation of safety rules, immediate and proper medical care of the injured and highest degree of rehabilitation training.

It is high time a thought should be given to this, otherwise we will go on loosing our skilled workers.

REFERENCES

1. **Goldwyn, R. M., Day, L. H.,** "Acute Industrial Hand Injuries: A Socio-Medical Study," Plastic and Reconstructive Surgery, 44, 567-575, 1969.
2. **Page, R. E.,** "Hand Injuries At Work: (An Analysis of Patients Attending Hospital)", The Hand, 7:1, 51-55, 1975.

Clean Intermittent Non Sterile Self Catheterisation (CISC)—A Better Choice in Paraplegic Bladder

Lt. Col. V. K. Kapoor, Lt. Col. S. C. Sharma, Lt. Col. V. K. Jalota and Lt. Col. N. K. Saha

Urology Centre, Command Hospital (CC), Lucknow, CPL Lucknow

Urinary tract complications constitute the major cause of morbidity and mortality in the paraplegic patients. Indwelling bladder catheterisation at present in use in various paraplegic centres is probably responsible for most of the urinary tract complications. Clean intermittent self/assisted catheterisation as against continuous indwelling catheterisation has shown encouraging results (Lapide et al. 1972, Rao et al. 1979). Present study done in 110 Paraplegic/Tetraplegic patients compares their relative role and highlights the better overall efficiency of CISC.

MATERIAL AND METHODS

One hundred and ten patients with paraplegia/tetraplegia who were admitted and treated in a big service hospital during the last four years were included in the protocol. They were divided into groups A and B as under:—

Group A : Forty patients managed with indwelling Catheter (Folleys/Gibbons). Catheter and bag were changed every week.

Group B : Seventy patients managed with clean intermittent non sterile self/assisted catheterisation (CISC) (Fig 1 and 2). Truncated Gibbons catheter size 14 was used (Fig. 3) with sterile liquid paraffin as lubricant.

Patients in both groups were allotted at random and matched in age, sex and other anthro-pometric parameters.

In both groups catheterisation was discontinued as and when a state of balanced bladder was achieved. Through repeated local and systemic examination was carried out. Urine routine examination and culture, blood urea, serum creatinine and residual urine assessment was done once in 15 days. Intravenous urogram, micturating cystogram, carbon dioxide cystometry and electromyography were carried out after 3 months and at the time of discharge from the hospital.

RESULTS

A total of 110 patients divided at random in group 'A' and 'B' with 40 patients in group A and 70 in group B were studied. In these groups ninety-two were in the age group of 20-40 year. There were one hundred and two males and eight females, indicating a predominance of males due to the younger male dominant population group dependant on service hospitals. Supra sacral lesions were common (87%) than the sacral lesions (13%). Lower thoracic injury followed by lower cervical injury were the commonest lesion in the present study (Table I). In both the groups age and sex were matched. The only variable was the mode of catheterisation, so as to critically evaluate its role in the two groups.

Fig. 1. Self Catheterisation by a paraplegic patient.

Fig. 2. Assisted catheterisation in a tetraplegic.

Fig. 3. Catheterisation Kit consisting of truncated Gibbon's catheter and few gauze pieces in a polythene bag.

Significantly better results were achieved in group B as compared to group A. Less than 50 ml of residual urine was noted in 88% patients of group B as against 18% in group A after six months (Table I). Radiologically upper urinary tracts were abnormal (15%) in group B as compared to 70% in group A. Abnormal lower urinary tracts in 25% in group B was much less as compared to 58% in group A. Over all Radiological involvement of upper and lower urinary tracts was much less in group B (Table I). Urine at the time of discharge was sterile in 92% of group B, while it was sterile only in 32% of patients in group A (Table II). Urinary bladder, urethral and detrusor sphincter functions were better in group B as compared to group A (Table II). Balanced bladders could be achieved in 93% in group B as compared to 47% in group A (Table II).

All these findings indicate a better and attractive bladder recovery in patients treated with CISC.

Table I. Paraplegic bladders: details of level of injury (a), residual urine (b) and results of radiological assessment in the two groups (c)

		Group A			Group B		
(a)	Level of Injury						
	Upper Cervical	1			3		
	Lower Cervical	10			11		
	Upper Thoracic	2			3		
	Lower Thoracic	20			41		
	Lumbo Dorsal	5			5		
	Lumbar	2			7		
	Total	40			70		
(b)	Residual Urine	1m	3m	6m	1m	3m	6m
	100 ml	30	24	21	30	9	0
	50-100 ml	10	12	12	21	26	8
	50 ml	0	4	7(18%)	14	35	62(88%)
		40	40	40		70	70
(c)	Radiological Assessment						
	Upper urinary tract						
	Normal	12 (30%)			60 (85%)		
	Abnormal	28 (70%)			10 (15%)		
	Lower urinary tract						
	Normal	17 (42%)			63 (90%)		
	Abnormal	23 (58%)			07 (10%)		

DISCUSSION

Continuous indwelling catheter with condome as a mode of drainage in dysfunctional bladders is frequently used. This is fraught with various risks and dangers especially troublesome and hard to treat infections in the urinary tract. Constant requirement of catheter care, changing the catheters and bags once a week, blockage of catheters necessitating frequent irrigation, persistent infection requiring use of expensive antibiotics for long periods, and cost of multiple operative procedures are the other problems and are constant source of economical strain on the paraplegic centres. Cost of multiple surgical procedures to deal with complications like uretheral fistulae, diverticulae, bladder stones, vesicoureteral reflux is additional source of financial drain on these centres. Clean intermittent Self/Assisted Catheterisation advocated by Rao et al. (1979) sounds absurd to many Surgeons and they are surprised whenever clean intermittent self catheterisation (CISC) is advised. Its use in our centre has completely changed the pattern of problems faced by us earlier. Patients with symptomatic clinical infection have considerably reduced from 85% to 15% inspite of persistent bacteriuria, thus considerably reducing the use of antibiotics and associated complications. Radiologically 70% abnormal upper tracts noted in group A have reduced to 15% in group B. In group B at the end of six months achieving 93% of balanced

Table II. Paraplegic bladder—comparative details of effect of management in group A and B

		A	B
(a)	*Final Urinary bladder state*		
	Balanced	19 (47%)	65 (93%)
	Unbalanced	21 (53%)	5 (7%)
(b)	*Urine Culture Positivity*		
	At admission	100%	88%
	During bladder training	100%	92%
	Final	92%	32%
	Septicemic deaths	3	Nil
(c)	Carbon dioxide cystometry and Electromyography	20 cases each	
	"Bladder function"		
	Normal	3	11
	Hyper-reflexic	13	6
	Areflexic	4	3
	"Urethral function"		
	Normal	7	14
	Hyper-active	13	5
	Inactive	Nil	1
	"Detrusor Sphincter"		
	Dyssynergia	10	1

bladder is rewarding as compared to 47% in group A.

Danger of recurrent urinary tract infection due to unsterile catheter is not a problem. Intermittent catheterisation prevents over stretching of urinary bladder producing bladder ischaemia. The bladder urothelium, in the absence of trauma, does not allow bladder infection to establish, so long as bladder is completely emptied. Endogenous infection by self catheterisation in patient who is already immunologically competent against his own bacterial flora does not cause symptoms.

Persistent/recurrent infection in both groups during bladder training is very common but in group B, infection does not produce serious complications noted in group A and thus does not require prolonged, repeated surgical procedures necessitating prolonged hospital stay. The present study therefore concludes that aims of paraplegic bladder management are ideally achieved by CISC.

CONCLUSION

1. Institution of clean intermittent self catheterisation from the very beginning is rewarding. It helps in early rehabilitation of paraplegics and is strongly recommended for use in the paraplegic centres.

2. It reduces the urethral, bladder and renal complications considerably and helps in developing the balanced bladders at the earliest. It does not require aseptic catheterisation by the Medical Officers as suggested by others. One catheter lasts for about 3 months and this cuts down recurring expenditures on catheters and bags. It cuts down the cost of prolonged courses of antibiotics usually required in group A.

3. It reduces the work load on the hospital by doing away with autoclaving of equipment.

4. Aims of paraplegic bladder management are ideally achieved by CISC.

REFERENCES

1. **Lapides, J., Diokno, A. C. et al.,** Clean intermittent self catheterisation in the treatment of urinary tract disease. J. of Urol., 108, 79-82, 1972.
2. **Rao et al.,** Non sterile atraumatic catheterisation in Neurogenic and non-neurogenic bladder dysfunction. Ind. J. of Surgery, 198-204, 1979.

Sexual Problems in Paraplegics

DR. UPINDERPAL SINGH[1], DR. S.K. VARMA[2]
Rehabilitation and Artificial Limbs, All India Institute of Medical Sciences, New Delhi

The importance of sexual problems in paraplegics is discussed. A brief is given about management of a patient with this problem. Sexual problems of 20 male paraplegic patients were studied. 70% talked freely about their problems. 70% reported erections. 40% could perform intercourse after counselling. Ejaculation was present in one case. Orgasm was experienced by 20% cases. Sex play was gratifying in 75% cases, irrespective of the type of play.

INTRODUCTION

While in the United States one is discussing sex openly even in a group; or watching a film in the congenial atmosphere of a hospital, on a couple with one of its partners a quadriplegic below C_6 perform a sex act; or talking on homosexuality without any reservations; it becomes hard to accept that a paraplegic in India won't like to talk about it because he has other priorities. For a common man in India, sex is a taboo to talk about, sin to perform other than for procreation and 'dirty' in the general sense. It has been on the neglect even in the advanced countries with permissiveness in sex. An American with paraplegia was quoted saying: "It would have helped if some sort of sex was possible. It would have given me something to fall back on". An Indian feels exactly the same way. The only difference being that he won't say it openly. There is a vacuum of literature on sexuality in Indian paraplegics. It is true that we in India can't go about it as our allies in the west. Even the health professionals, leave aside anybody else, are indifferent or hesitant.

If one really dramatises the situation or is hesitant to talk about sexual matters to a patient, the patient never confides in or even if he does, he has only a very superficial involvement. The basic pre-requisite being absolute privacy in the clinic or the hospital room. If sex is talked as a matter of fact we talk of any other problem to a patient of paraplegia like asking about bladder, bowel and sex in the same go, the patient is never shocked at the sudden question and speaks out his heart if the rapport has already been made. An eye to eye contact with the patient is important to put him into confidence. One should not wait for other things to be discussed first and leave the sex matters to a later session. Of course separate sessions with the partners too are required to discuss out the individual problems. If discussion about this is also made on the first meeting the patient does feel that he is really being looked after wholly and completely from all aspects. Anxiety about one's sexual performance is one of the biggest preoccupations or fears. If one is conversant with his problems and expectations and then learns to perform with one's limitations, it allays most of the anxieties and fears and one participates better in the rehabilitation program.

[1]Lecturer.
[2]Professor and Head of the Department.

MATERIAL AND METHOD

We have used the same clinical approach to our patients as above. In this study we are presenting some of the sexual aspects of our patients with paraplegia. We chose 20 males for this study with the segmental level of the cord lesion ranging from C_6 to L_4 (Table I).

Table I. Distribution of level of lesion

Cord level		No. of patients
Cervical	Incomplete	1
Dorsal	Incomplete	4
	Complete	6
Lumbar	Incomplete	2
	Complete	7
Total		20

The duration ranged from 3 months to 4 years. The age distribution is given in Table II. 19 out of 20 were married.

Table II. Age distribution of patients

Age (in years)	No. of patients	%age
Below 20	1	5
20-30	12	60
30-40	4	20
Above 40	3	15
Total	20	

OBSERVATIONS AND DISCUSSION

14 patients talked freely about their problems themselves once the topic was started and 4 confided when probed. A 25 years old patient could not shed his hesitation and one 22 years old said that he never thought about it, as he was unmarried. It can be explained otherwise also that in India even if one has premarital sexual relations or experiences one does not come out with it (see Table III).

Table III. Frankness in talking

	No. of patients	%age
Freely	14	70
After probing	4	20
Refused to talk	1	5
No feelings	1	5
Total	20	

Of all 20 patients 14 reported erections. Psychogenic erection was present in only one patient with incomplete dorsal lesion. In the rest of the 13 patients it was reflex. According to the site of lesion, 10 out of 11 of cervicodorsal spine, 4 out of 9 of lumbar spine (L_1—2 patients, L_2 incomplete—1 patient and L_4—1 patient) had erections. No patient had tried to have a sex play other than for caressing or kissing for various reasons. Most of the patients felt half a man without the powers of having sex, loss of bladder and bowel control and loss of muscle strength. Most of the patients thought that they never thought of having sex for the fear that it may damage their cord further.

All the patients were given counselling according to the deficits and the sexual faculties left. Wherever possible both individual counselling and conjoint counselling with the partner was arranged. Conjoint counselling was possible only in 7 cases. The importance was laid on the inter-personal relations and respect for the partner's needs in the matter. A free discussion was allowed on the sex play; e.g. preparation for love play, care of bladder & bowel for it. Full treatise was given on the positions of each and the aggressiveness of the partner. But intercourse was not emphasised too strongly. It was limited to the patients attaining erections. The partners were advised on how to maintain the erection. Out of 14 patients, who could attain erections, 8 could have intercourse, which was satisfactory

in 5 patients, 2 did not feel like having it. In one patient partner's cooperation was lacking. One case had a mechanical barrier due to flexor and adductor spasm of the hips. Only one patient had urinary incontinence. Performance of 2 patients could not be known for want of further sessions. The main problems for failure of intercourse were due to loss of erections and lack of cooperation from the partner. Ejaculation was present in only one patient having an incomplete lesion at D_{12} level (see Table IV).

Table IV. Performance

	No. of patients	%age
Erections	14	70
Intercourse possible	8	40
—Satisfactory	5	25
—Unsatisfactory	3	15

Orgasm was experienced by 4 patients with incomplete dorsal (2) and lumbar (2) lesions. It was a mixed feeling of pain, heaviness in the head, flushings and a feeling of pleasure more so because of the fact that they were capable of manhood in this respect, and they were able to satisfy their partners to some extent. 2 patients with dorsal complete lesions experienced autonomic hyper-reflexia.

In all the patients, extra genital sex play and the less conventional methods were advocated specially in those patients who could not attain erections. The over all results of sex play were gratifying in 15 out of 20 patients, irrespective of the type of sex play. The rating as put by the patients was : good in 11 out of 20, average in 3 patients and 3 patients did not comment (see Table V).

Table V. Patients reaction to sex play

Reaction	No. of patients	%age
Gratifying	15	75
good	11	55
Okay	3	15
No comment	3	15
Patient lost to follow up	3	15

In general all the patients once they had sexual counselling started feeling better morally, became more active in the exercise regime, showed better cooperation with the staff and better acceptability of disability with a new will to live. Looking at the needs of the patients and the boost it gives to the patient's morale, it is quite evident that how important sexuality is.

CONCLUSION

The problem of sexuality in paraplegics is global, the only difference in India being in its expression. Having sex does not mean having intercourse; understanding this itself widens the scope of sexuality. Clear policies are to be made in the Rehabilitation departments to deal with the sexual problems. The staff should be trained to deal with it in an open fashion without avoiding words, ideas, concepts, activities and myths. The patient should be encouraged to talk to anyone he feels comfortable with.

REFERENCES

1. **Comarr, A. E.,** "Sexual function among patients with spinal cord injury", Urol. Int. 25 : 134-168, 1970.
2. **Cole, T. M., Chilgren, R. & Rosenberg, P.,** "A new program of sex education and counselling for spinal injured adults and health care professionals", Paraplegia 11 : 113-124, 1973.
3. **Eisenberg, M. G., Lyne, C. Rustad,** "Sex education and counselling program on a spinal cord injury service", Arch. Phys. Med. Rehabil. 57 : 135, March, 1976.

4. **Held, J. R., Cole, T. M., Held, C. A., Anderson, C. & Chilgren, R. A.,** "Sexual attitude reassessment-workshop : effect on spinal cord injured adults, their parents and rehabilitation professionals", Arch. Phys. Med. Rehabil. 56 : 14-18, 1975.
5. **Lee, Crigler,** "Sexual concerns of the spinal cord injured", Nurs. Cl. of North Am. 57 : 135, March 1976.
6. **Mary, D. Ramano, Robert, E. Lassiter,** "Sexual counselling with the spinal cord injured, clinical notes", Arch. Phys. Med. Rehabil. 53(12) : 568-572, Dec. 1972.
7. **Richard, W. Hanson, Michael, R. Franklin,** "Sexual loss in relation to other functional losses for spinal cord injured males", Arch. Phys. Med. Rehabil. 57 : 291, June 1976.
8. **Tarabulcy, E.,** "Sexual function in the normal and in paraplegics", Paraplegia 10 : 201-208, 1972.
9. **Zwi, Hoch,** "Sex therapy and marital counselling for the disabled", Arch. Phys. Med. Rehabil. 58 : 413-5, Sep. 1977.

Heterotopic Ossification in Spinal Cord Injury

Dr. A. K. Agarwal[1], Dr. V. P. Sharma[2], Dr. O. P. Singh[3], Dr. R. P. Srivastava[4]
Prof. U. S. Mishra[5]
Deptt. of Physical Medicine & Rehabilitation and Deptt. of Orthopaedic Surgery
K. G. Medical College, Lucknow

Heterotopic Ossification around both knees and hips in case of spinal cord injury has been presented. The generalised and massive HO is quite uncommon after 3½ years of SCI.

Heterotopic Ossification following spinal cord injury or in other neurological disorders can occur but it is uncommon in Indian conditions. This Heterotopic Ossification can limit the range of joint motion and thus restricting the ambulation and wheelchair activities. This disorder is also infrequent at Royal Perth Rehabilitation Hospital, Western Australia which may be due to better control of infection particularly of urinary tract.[1]

Various drugs have been suggested to prevent this complication. Recently Disodium Editronate (EHDP) has been tried to prevent Heterotopic Ossification following spinal cord injury.[8] Stover has proposed that early treatment is essential since H. O. mostly develops within one to four months after spinal cord injury.

Heterotopic Ossification following total hip replacement is a frequently reported complication and for prevention, Diphosphonates, Indomethacin and Radiation therapy had been recommended.[3]

We observed a case of Heterotopic Ossification following spinal cord injury in a case which is being reported.

CASE REPORT

Mr. D. Y., 20 years male, a labourer had a fall from 70 feet height while working at the site in Middle East 3½ years before admission. He developed complete Paraplegia with bladder and bowel involvement following the injury. Immediately laminectomy with internal fixation was done. Post operatively no recovery occured, 2 years later, he developed sacral sore for which flap rotation was done. Three weeks later patient noticed swelling around right knee and 6 months later around left knee. Gradually passive movements at both knees and hips were limited. The patient was placed in prone position for sacral sore surgery for about 3 weeks wherein no movement at hips and knees were allowed. This restriction of movement might have precipitated the H. O. At present patient has 10 to 15° ROM (passive) at both knees and 30 to 35° passive ROM at both hips.

X-ray spine showed compression fracture of T12. The X-ray of both hips and knee showed massive H. O. (Fig. 1-3).

In his serum chemistry study, serum calcium was 8-9 mg%, Phosphorus 4.5 mg%, Alka-

[1]Senior Medical Officer cum Reader in Physical Medicine & Rehabilitation.
[2]Lecturer in Physical Medicine & Rehabilitation.
[3]Reader in Ortho. Surgery.
[4]Medical Officer in P. P. Unit Orthopaedic Surgery.
[5]Director Professor in Physical Medicine & Rehabilitation and Head, Ortho. Surgery.

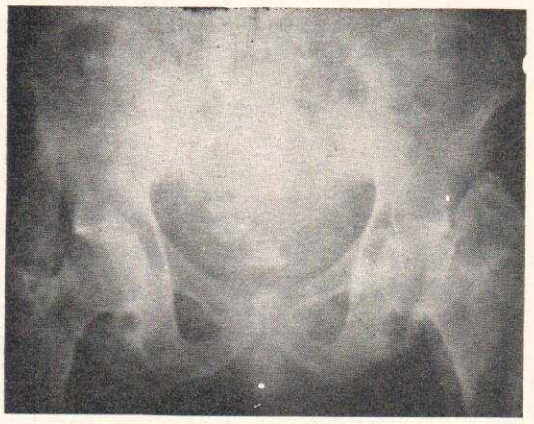

Fig. 1. Skiagram showing heterotopic ossification around both hip joints.

Fig. 2. Skiagram showing massive HO around knee joint.

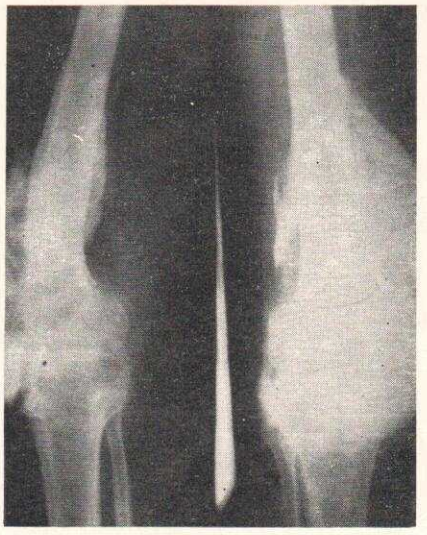

Fig. 3. Skiagram showing massive HO around knee joint.

line phosphatase 13 KA. units and Acid phosphatase 2 KA units.

DISCUSSION

The cause of Heterotopic bone formation is not known yet. The reported incidence of this disorder varies from 20% and 50% and affects the hips, knees and shoulders primarily in that order.[3,6,8,9] Predisposing or causative factors are also unknown. However it has been observed that devitalised tissue acts as an experimental inductor of Heterotopic Ossification.[4] Factors such as local trauma, infection, decubitous ulcer and vascular insufficiency in the presence of hypoxaemia may favour, the development of Heterotopic Ossification. Stover[8] has reported that in acutely injured patient

paraarticular ossification began mainly between one to four months post injury but can be found well beyond this period.[3] Diagnosis can be suspected when swelling in muscle about the susceptible joint is noted. The swelling is usually more firm than that associated with venous thrombi.[2] The serum alkaline phosphatase is usually elevated in early stages[5] and bone formation can be detected by Radio isotope scanning before X-ray finding is obtained.

REFERENCES

1. **Bed Brook, G. M. and Sedgley, G. I.,** The management of spinal injuries—past and present. Int. Rehab. Med. 2, 45-61, 1980.
2. **Bouldger, J. T.,** Heterotopic Bone formation and Alkaline Phosphatase. Archives of Physical Medicine & Rehab., 56: 36-39, 1975.
3. **Cook, S. D.,** Effects of treatment for Heterotopic Bone formation on Biological fixation: Journal of Rehab. R. & D. Progress report, 1988.
4. **Hassard, G. H.,** Heterotopic Bone formation about the hip and unilateral Decubitus ulcer in spinal cord injury. Arch. of Physical Med. & Rehab., 56: 335-358, 1975.
5. **Ostrowaski, K. and Wlodorski, K.,** Induction of Heterotopic Bone formation in Comar CL and Bronner J. eds. Biochemistnal and Physiology of Bone, Vol. 111, New York and London. Academy Press, 299, 1971.
6. **Rossier, A. B., Bussat, P. H. and Infante, F.,** Current facts on Para-Osteo-arthropathy (POA). Paraplegia 14: 146-156, 1976.
7. **Stover, S. L., Hataway, C. J. and Zeiger, H. E.,** Heterotopic Ossification in spinal cord injury patients. Arch. of Physical Med. & Rehab., 56 , 199-240, 1975.
8. **Stover, S. L., Hann, H. R. and Miller, J. R.,** Disodium Editronate in prevention of postoperative recurrence of Heterotopic Ossification in spinal cord injury patients. J. of Bone & Jt. Surgery, 58A: 685-688, 1976.
9. **Wharton, G. W.,** Heterotopic Ossification. Clinical Orthopaedics, 112: 849-855, 1975.

Management of Tennis Elbow by Exercise Treatment

Dr. S. C. Kasliwal[1], Dr. M. K. Mathur[2], Dr. Rajneesh Sharma[3]
Rehabilitation Research Centre, S. M. S. Medical College & Hospital, Jaipur (Rajasthan)

The etiopathogenesis of Tennis elbow is not understood very well and different causes have been enumerated. As a consequence various forms of treatment have been described which may be quite effective immediately but results are not long lasting and recurrence becomes a rule. In the present series 60 cases were given exercises for increasing the power, endurance and flexibility of the all extensor muscles of the wrist. They were followed up for adequate period and the results are presented here.

INTRODUCTION

Tennis elbow is widely regarded as a minor ailment, which causes a little more than an inconvenience to the patient, but a considerable loss of efficiency to manual workers, housewives and others involved in repeated arm movements, and forced extension of the wrist. Thus, it has an important socio-economic aspect where a worker is prevented from earning his livelihood.

Nirschl (1973) described that the prime etiological factor is a force overload at the aponeurosis of forearm extensors. There is a stress overload on the basis of disadvantage leverage force system, inadequate forearm extensor power and endurance to withstand moments of force placed against the forearm (intrinsic overload) and inadequate forearm extensor flexibility (extrinsic overload). On the basis of above mentioned concepts, the present study was carried out.

MATERIAL AND METHODS

Patients attending Out Patient Department of Rehabilitation Research Centre with a complaint of pain over lateral aspect of elbow were selected for this study. To confirm the diagnosis of Tennis elbow certain special tests were performed.

1. Wrist Extension Test

With elbow in extension and then wrist is dorsiflexed against resistance, then increased pain over the site of lesion.

2. Test for Radiohumeral Bursitis and Synovitis

Patient is not able to raise a heavy book with forearm pronated but able to do so when forearm is supinated.

3. Tests for radial nerve entrapment

(a) Resisted extension of middle finger with extended elbow, leads to pain in the common extensor origin.

(b) There is a local tenderness along the radial nerve and its branches in front of the radial head, which should be compared with other side because this region is often tender to deep pressure.

[1]Professor, Physical Medicine & Rehabilitation.
[2]Lecturer, Physical Medicine & Rehabilitation.
[3]Resident, Physical Medicine & Rehabilitation.

Following regime of treatment was followed for the selected group of patients suffering from Tennis elbow.

Patients with severe degree of pain were given injection Hydrocortisone locally and cases were examined one week after injection. Those patients in which pain was reduced to mild degree, were advised exercise regime. Injection Hydrocortisone was repeated in case pain was not reduced at weekly interval. Maximum three injections were given.

Those cases in which pain was of moderate degree, ultrasound was given over tender region for 10 minutes per day for 7-10 days and after relief of pain exercise regime was started. In some cases injection Hydrocortisone was also used who had no relief after ultrasound therapy.

Patients with mild intensity of pain were advised exercise regime from the beginning but in some cases ultrasound was also used who complained of increased discomfort with exercises.

Some analgesics like aspirin, ibuprofen and local application were also used for relief of pain and inflammation. After relief of inflammation, exercise regime was started. The exercises were as follows :

1. Stretching of Forearm Extensors

Patients were asked to flex the elbow at 90 degree, pronate the forearm and hold the wrist at 90 degree flexion with pressure of the opposite hand. Then the wrist was flexed and the

Fig. 1

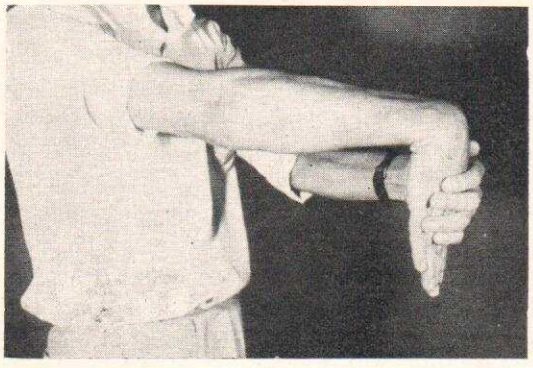

Fig. 2

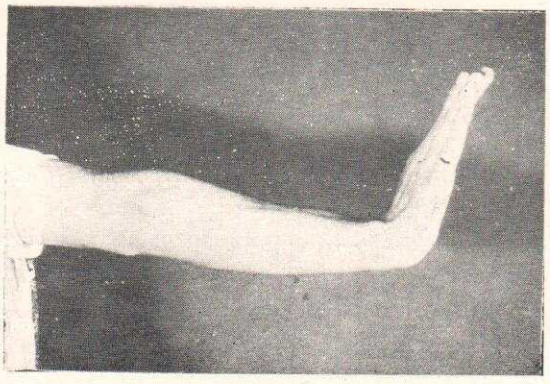

Fig. 3

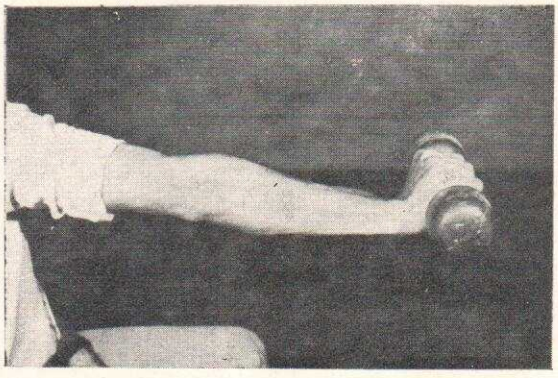

Fig. 4

elbow fully extended and held for 10 seconds. This was repeated 10 times daily in the morning and evening. (Fig. 1 & 2)

2. Strengthening Exercises

(a) Elbow was fully extended and pronated, maximum dorsiflexion of wrist and fingers was done for 10 seconds, 10 times daily in the morning and evening. (Fig. 3)

(b) Patients were asked to hold a 3-5 pounds forearm flexion extension curl with wrist in extension for 10 seconds, 10 times daily in the morning and evening. (Fig. 4)

The number of repetitions were reduced if patients complained of much pain in the beginning and then gradually increased. Patients in whom the pain persisted or was aggravated by their activities and those who were unable to withdraw from their activities were advised to use a non-elastic forearm band during their work.

OBSERVATIONS

Table I. Age & sex distribution of patients

Age group (in years)	Male	Female	Total	Percentage
31-40	8	16	24	40.00
41-50	10	21	31	51.67
51-60	3	2	5	8.33
Total	21	39	60	100.00

Most of the patients (92 percent) were in the age group of 31-50 years and females were more commonly affected than males.

Table II. Showing number of patients given different type of initial treatment

Treatment	Number of cases	Percentage
Exercise alone	18	30.00
Ultrasound therapy + Exercise	22	30.67
Hydrocortisone Inj. + Exercise	20	33.33
Total	60	100.00

The number of cases in different types of initial treatment were almost equal.

Table III. 20 relapsed cases included in the study

Number	Treatment taken	Duration of relief of pain in months	Duration of present symptoms in months
1.	Inj. Hydrocortisone	8	1
2.	Inj. Hydrocortisone	2½	1½
3.	Inj. Hydrocortisone	2½	1½
4.	Inj. Hydrocortisone	1	1
5.	Inj. Hydrocortisone	1	1½
6.	Inj. Hydrocortisone	2½	½
7.	Inj. Hydrocortisone	5	1
8.	Inj. Hydrocortisone	4	1
9.	Inj. Hydrocortisone	2	1½
10.	Inj. Hydrocortisone	5	½
11.	Inj. Hydrocortisone	2½	1
12.	Inj. Hydrocortisone	1	2
13.	Inj. Hydrocortisone	2½	1
14.	Inj. Hydorcortisone	4	½
15.	Inj. Hydrocortisone	3	½
16.	Inj. Hydrocortisone	2	1½
17.	Inj. Hydrocortisone	1	1½
18.	Inj. Hydrocortisone	2½	1
19.	Inj. Hydrocortisone	6	1
20.	Inj. Hydrocortisone	3	1½

Patients who were given injection hydrocortisone had recurrence in the period ranging from one to eight months with an average of three months.

Table IV. Results

Type of treatment	Results (Number of cases)					
	Excellent	Good	Fair	Poor	Worst	Total
Exercise alone	10	7	—	1	—	18
Ultrasound therapy plus Exercise	2	20	—	0	—	22
Inj. Hydrocortisone plus Exercise	0	3	10	7	—	20
Total	12	30	10	8	—	60

About 70 percent patients had excellent to good results, while 17 percent had fair results followed by poor results in 13 percent of cases.

DISCUSSION

In the present series maximum number of cases were in the 4th and 5th decades. Females were more commonly affected than males by a ratio of 1.9 : 1. These findings compare well with the findings of previous workers. In our country females are engaged in household activities which require repeated pronation and supination of forearm and strong grip in works like washing of clothes, cleaning utensils, cooking and cleaning the floors. Higher incidence in females can be further explained by their large carrying angle in comparison to males.

In the present series there were 20 cases out of 60, who were given injection hydrocortisone in the past. They had a recurrence in the period ranging from 1-8 months with an average of 3 months. Thus, relief after injection Hydrocortisone was not long lasting and recurrence was a common problem.

In the present series 70 percent cases responded well and had good to excellent results. These cases were doing exercises regularly.

In 13 percent cases results were poor, since pain had recurred and the patients were having a mild disability after initial complete relief of symptoms. These were the cases who had stopped doing exercise after the initial complete relief of pain. In remaining 17 percent cases with fair results, mild degree of pain and disability persisted but were not aggravated after exercises.

Minimum followup period was 3 months and maximum 1 year with an average of $4\frac{1}{2}$ months. Overall results were good with exercise regime in preventing recurrence of Tennis elbow.

Although the present series is quite small with short follow up period, it appears that if exercises were performed regularly, it could be an effctive method of conservative treatment in preventing recurrence of Tennis elbow.

REFERENCES

1. **Aldes, J. H.,** Practitioner, 13 : 89-96, 1956. Cited by Goldie (1964).
2. **Coste, F., Truchot, P., Hinant, G. and Mathieu, C.,** Rev. du Rhum., 18 : 42-44, 1951.
3. **Murley, A. H. G.,** Lancet, 2 : 223-225, 1954.
4. **Quin and Binks,** Lancet, 2 : 221-223, 1954.
5. **Young, M. M. et al.,** J. Bone Jt. Surg. 36-A: 602, 1954.
6. **Nirschl, R. P.,** Ortho. Clinic North Amer. 4: 3, July, 1973.

The Role of Plaster Immobilisation with Local Ultrasound in the Treatment of de Quervain's Disease of Wrist

DR. B. B. SARKAR*
Department of Physical Medicine, Medical College, Calcutta

An alternative method of treatment in cases of de Quervain's disease has been studied by plaster immobilisation of the wrist along with local ultrasound therapy at the region of radial styloid process through a window in the plaster. The procedure is safe to all types of cases including patients suffering from diabetes and gastroduodenal ulcers without use of any parenteral or oral drugs.

INTRODUCTION

The de Quervain's disease of wrist is a painful inflammatory condition due to stenosis of the common sheath of abductor pollicis longus & extensor pollicis brevis at the region of styloid process of radius. This condition was first described by de Quervain in 1895. He pointed out that repeated and excessive movements of the thumb amongst the workers were responsible to such disabled condition. Later, his theory was appreciated in stenosing tenosynovitis of peroneus longus and in trigger fingers.

MATERIAL AND METHODS

In the present series, the method of treatment is based on complete rest to the part by plaster immobilisation and application of local ultrasound over the common sheath for abductor pollicis longus & extensor pollicis brevis at the styloid process of radius through a window in the plaster (Fig. 2).

50 cases of de Quervain's disease irrespective of sex were collected from out-patient departments of Calcutta Medical College Hospital, Burdwan Medical College Hospital and from private clinics. All of them were clinically examined and investigated to exclude other pathological conditions before the actual treatment was started. Later, each of them were treated with plaster immobilisation of the part and local application of ultrasound simultaneously. Ultrasound was given 8 minutes daily for three weeks with a frequency of 0.3 to 0.5 (pulsed wave) watts per sq. cm. After 3 weeks, plaster was removed without withdrawing the ultrasound therapy for 3 to 4 days more to ease the wrist and the thumb from stiffness due to immobilisation. Later, each patient was reexamined to compare the findings with thoseof before treatment.

Method of Plaster Immobilisation

Below elbow complete plaster was done including the wrist and thumb. Proximally it was extended from midforearm and distally upto proximal to knuckle—more or less similar to the plaster as done in colles' fracture after manipulation. The forearm was kept in full pronation, wrist being in neutral position but with full adduction (Ulnar deviation). The

*Associate Professor.

Fig. 1. Showing the position of wrist and thumb with a window in the plaster.

Fig. 2. Showing the application of ultrasonic therapy through the window in the plaster.

thumb was kept in full abduction with flexion at CMC (carpo-metacarpal) joint and MCP (metacarpo-phalangeal) joint. Dorsally the plaster was extended upto midway between the wrist and knuckle and anteriorly upto the mid-palm so that patient can do full grip. The plaster was kept slightly loose to allow some active movements of thumb inside to avoid adhesion of the tendons with surrounding soft tissue. Lastly, a window was made to expose about 7 cm. × 7 cm. area around the radial styloid to accomodate the 'Sonar head' of the ultrasound machine (Fig. 1) for local treatment from 3rd day of immobilisation when the plaster was fully dry.

OBSERVATION

50 patients were treated and clinical assessment was done to see the effect of therapy (Table 1).

It was observed that 88% (excellent 76% and good 12%) of satisfactory result was noted in the present series.

Table Showing the clinical assessment and results

Clinical assessment	Results			
	Excellent	Good	Fair	Poor
1. Active abduction in extension, and adduction in flexion of thumb & wrist	Painless	Painless	Painless	Painful
2. Forced adduction of wrist & thumb (ulnar deviation)	Painless	Painless	Painful	Painful
3. Local tenderness	Nil	Present	Present	Present
Total No. of cases 50	38	6	2	4

DISCUSSION

The standard treatment of de Quervain's disease of wrist by infiltration of the common sheath of abductor pollicis longus & extensor pollicis brevis with local hydrocortisone, and decompression operation of the sheath are universally accepted. Antiinflammatory drugs have also some role to relieve the patient from pain.

Because of the chance of local infection in diabetic patients infiltration with hydrocortisone is contraindicated. Similarly, operative treatment is better to be avoided unless diabetes is controlled. Lastly, infiltration of the sheath is not a very easy procedure. Unless the

solution is pushed into the space between the sheath and the tendons, even repeated injections will end in failure.

'Rest' to the part has definite role in the treatment of tenosynovitis. In view of the above facts without defying above procedures, the author in the present series tried to find out an alternative treatment suitable to all types of cases including patients suffering from diabetes and gastroduodenal problems with high percentage of success. This combined procedure without any oral antiinflammatory drugs was not well documented in past in the treatment of de Quervain's disease of wrist.

Acknowledgement

The author wishes to express his gratitude to the Superintendent of Burdwan Medical College Hospital and Calcutta Medical College Hospital for allowing to continue the work during 1980-88. Lastly, he is grateful to the physiotherapists of Physical Medicine Department for application of Ultrasonic Therapy and Orthopaedic Department for using the plaster room.

REFERENCES

1. **Bailey and Loves,** Short Practice of Surgery, H. K. Lewis, 312, 1968.
2. **Fitz, Gerald, R. H.,** Intrasynovial injection of steroid, use and abuses. Mayo Clin Proc. 51: 655-659, 1972.
3. **Frank, H. Krusen,** Hand book of Physical Medicine & Rehabilitation. W. B. Sander's Company, 3rd Ed. 616, 1982.
4. **Last, R. J.,** Anatomy—Regional and Applied. J & A Churchill, 4th Ed., 170, 1966.
5. **Mercer, Sir Walter,** Mercer's Orthopaedic Surgery, 8th Ed. 923-25, 1983.
6. **Michael, Mason, H. L. F. Currey**—An introduction to Clinical Rheumatology, Pitman Medical, 2nd Ed. 240, 1975.

A Study of Improvement of Hand Function in Post Colles' Fracture Cases by Occupational Therapy

DR. A. BALLAV[1]
Deptt. of Physical Medicine, B. S. Medical College & Hospital, Bankura.
DR. D. P. BANERJEE[2]
Deptt. of Physical Medicine, R. G. Kar Medical College & Hospital, Calcutta.

Colles' fracture treated by conventional methods of reduction and POP immobilisation disturbs the hand function by its commonest complication as stiffness of wrist and small joints of hand, Sudeck's Osteodystrophy and rarely V.I.C. In order to get a functioning hand, hot paraffin bath and occupational therapy were chosen to overcome stiffness and to improve the functions. Instead of monotonus regular hand exercises in crowded gymnasium which was not liked by most of the aged patients, the trial was made with occupational therapy.

MATERIAL AND METHODS

Twentyfive cases were chosen from the out patients department of School of Physical Medicine, Seth Sukhlal Karnani Memorial Hospital, Calcutta in the year 1987.

After taking detailed clinical history, the assessment was done according to (1) Functional and Neurological assessments; (2) Activities of daily living; (3) Joint range.

These assessments were done on the first day of examination, after 3 weeks and 6 weeks of getting therapy and during therapy light work had been advised and after 6 weeks heavy works were allowed. In female patients. light household works were allowed from the beginning but most of them were resistant.

As pain and stiffness were most important amongst complaints, paraffin bath was given just before starting of occupational therapy daily.

The different modelities of occupational therapy were given under the guidance of an expert occupational therapist like :

1. To increase strength : Grip exerciser, Gym-kit-board, playing with plasti-Doh or plasticin, directing patients to squeeze clothes at first dry and then wet, to knead for making chapatis, to grind spices with stone grinder, specially for the housewives.

2. To increase range of different joints and to increase the ability of work of precision : Wrist Circumductors, Pronation-Supination devices, Peg boards—big and small board with round and square pegs, Multishaped knob board, posting box, Nesting jars for gradual coning of fingers and to increase co-ordination, spoke shave, Basket making with cane, Thread weaving, Hand printing machines were used.

3. To develop muscle re-education: Typing is used to improve co-ordination and subsequently to develop strength of specific hand muscles.

As in learning to type, the practice exercises are built first on letter drill, then on individual words, then on phrases and finally paragraphs. These exercises are formed according to the muscles to be exercised, rather than related to the learning of the keyboard, e.g.

[1]R.M.O. Cum Clinical Tutor.
[2]Reader & Head.

	Lt	Rt
Lumbricals of	↓	↓
	F D S A	J K L
	↓	↓
	Fifty	Jump
	Depend	Knock
	Scales	Little
	Antenna	

OBSERVATIONS AND DISCUSSION

Out of 25 patients 48% were male and 52% were female; 52% came from the age group of 41-60 years; predominent hand (Right) was affected in 48% of cases and one person had affection of both hands.

All the cases had stiffness of hand, malunion were present in 48% of cases; 4% had Sudeck's Osteodystrophy and only one patient had Volkman's ischaemic contracture. In 20% of cases, other associated problems were present.

The hand function was assessed with the standard parameters (Yadav & Verma and, Wynn Parry C. B. & Ronald Merae, loc. cit) except the grip strength, which was measured clinically by comparing with the normal hand. Hot paraffin bath was given to all patients.

One case had V. I. C. following, tight plaster. He was having gross flexor muscles contracture and showed no response to our nature of treatment and was finally referred to Plastic Surgery department.

Another case, 55 years, female housewife, showed typical features of pain, swelling and stiffness in wrist and fingers with shiny skin and gross osteoporosis in X-rays, following removal of plaster cast, did not respond to hot paraffin bath and occupational therapy as she was very much reluctant to occupational therapy due to her fear for pain and low intelligence as regarding following of instructions. This case was given a course of oral steroid therapy for 3 weeks and occupational therapy for another 6 weeks. She, after 12 weeks of therapy, improved her hand function to "Fair" from "Poor" performance.

Table I. Showing clinical improvements according to functional and neurological assessment

	Before therapy	After therapy
I. *Prehension:*		
Excellent	0	12
Good	6	7
Fair	8	4
Poor	11	2
II. *Sensory:*	2	Nil
III. *Motor:*		
Excellent	0	12
Good	0	7
Fair	6	4
Poor	19	2
IV. *Autonomic:*	Nil	Nil
V. *Steriognosis Power Retained in*	25	25

Table II. Showing clinical improvement according to activities of daily living

	Before therapy	After therapy
I. *Washing and Toilet:*		
Excellent	0	12
Good	3	7
Fair	5	4
Poor	17	2
II. *Dressing and Undressing:*		
Excellent	0	12
Good	5	7
Fair	4	4
Poor	16	2
III. *Communication:*		
Excellent	0	14
Good	5	6
Fair	3	3
Poor	17	2
IV. *General:*		
Excellent	0	12
Good	5	7
Fair	4	4
Poor	16	2

Table III. Showing clinical improvements according to joint range

	Range	Before therapy	After therapy
I. *Shoulder joint:*			
	100%	22	24
	76-99%	1	1
	51-75%	1	0
	Below 50%	1	0
II. *Elbow joint:*			
	100%	22	23
	76-99%	1	0
	51-75%	0	1
	Below 50%	2	1
III. *Forearm movements:*			
	76-100%	15	19
	51-75%	6	5
	26-50%	4	1
IV. *Wrist joint:*			
	76-100%	2	9
	51-75%	6	10
	26-50%	11	4
	1-25%	6	2
V. *Thumb movements:*			
	76-100%	21	24
	51-75%	2	1
	26-50%	0	0
	1-25%	2	0
VI. *Finger movements:*			
	76-100%	19	23
	51-75%	5	1
	26-50%	0	0
	1-25%	1	1

It was seen in almost all the patients, stiffness of hand and wrist was the chief complaint. On detailed interrogation some answered they were not told to do movements of fingers, elbow and shoulder and some told that they were instructed but, sheer out of fear, they did not do them properly and the end result was stiffness. This correlates with the literature (Wynn Parry C. B.—loc. cit).

CONCLUSIONS

25 cases were chosen from O. P. D. of S. P. M., S. S. K. M. Hospital, Calcutta in 1987. They were assessed with standard parameters on first day of arrival, 3 week and 6 weeks after therapy with hot paraffin bath and occupational therapy and following conclusions are drawn:—

1. Higher the age group lesser were the performance.
2. Lesser 'Excellent' results in female.
3. Prolonged and Improper plaster casting resulted in more complications and lesser 'Excellent' result.
4. Low intelligence of patient as in following proper directions gave 'poor' result.
5. Presence of complications—complicated returning to normal hand function.
6. Patients got better motivation in performing occupational therapy with a joy of creating something rather than performing boring exercise programme in gymnasium.
7. They felt psychologically boosted up.
8. Reablement of patients and finally Resettlement in their previous occupations were possible in higher percentage of cases.
9. The great achievements were to resettle an artist with his painting brushes and the patient, with Colles' fracture of both hands, in front of the typewriter machine with a smiling face.

REFERENCES

1. **Bailey and Love's Short Practice of Surgery,** 14th edition, H. K. Lewis and Co. Ltd., London.
2. **Campbell's Operative Orthopaedics,** Vol. I; 6th edition, C. V. Mosby Company, 1981.
3. **Colles Abraham,** On the fracture on the Carpal extremity of radius, Edinburgh Medical & Surgical Journal 10, 182, 1814.
4. **Ronald Merae,** Clinical Orthopaedic Examination; 2nd edition, Churchill, Livingstone.

Psychological Evaluation in Cervical Spondylosis

DR. SANJAI RASTOGI[1], DR. S. N. CHATURVEDI[2], DR. R. K. SHUKLA[3]
DR. S. B. SINGH[4], DR. SANJAY SRIVASTAVA[5], DR. S. K. VERMA[6]
G. S. V. M. Medical College, Kanpur

Eighty patients presenting with symptoms and signs of cervical spondylosis were evaluated psychologically. The condition, which presents with symptom complexes of pain, restriction of neck movements, radicluopathy and myelopathy, is mostly treated conservatively by physical methods. In the present study, 88.6% patients of cervical spondylosis were found to have one or more psychological disturbances which were the cause of patient's symptoms or the effect of the symptoms. In both situations, it seemed appropriate to recognise and treat the disturbed psychological status of the patient in addition to physical methods of treatment.

Cervical spondylosis is a common progressive degenerative disease of intervertebral disc leading to change in the surrounding structures especially bones and meninges; often associated with brachial neuralgia, cord compression, headache and vertebrobasilar insufficiency. It is clinically diagnosed by presence of pain in neck, restriction of neck movements and signs of root and cord compression (Wilkinson, 1971). The condition is usually treated by physical methods like various forms of heat therapy, cervical traction and neck exercises, coupled with anti-inflammatory analgesic drugs. Such conservative treatment may not succeed in alleviating the patient's symptoms completely unless the disturbed psychological status, which is very commonly present in such patients, is properly recognised and treated. In the present study, patients of cervical spondylosis have been evaluated to determine the significance of psychological factors in symptomatology.

MATERIAL AND METHODS

80 patients presenting with symptom complex of cervical spondylosis were subjected to psychological test and results were compared with those of 60 normal persons. Besides detailed clinical examination, each spondylitic patient was subjected to radiological examination and antero-posterior, lateral, right and left oblique views were taken to detect any organic lesion which can be held responsible for the patient's symptoms.

To study the psychological aspects of the disease, both normal and ailing persons were subjected to Cattell's questionnaire test. It provides information about sixteen personality factors which differ markedly from one indivi-

[1]Lecturer, Deptt. of Orthopaedic Surgery.
[2]Professor, Deptt. of Orthopaedic Surgery.
[3]Reader, Deptt. of Orthopaedic Surgery.
[4]Reader cum Clinical Psychologist, Deptt. of Psychiatry.
[5]Ex-Demonstrator, Deptt. of Orthopaedic Surgery.
[6]Ex-Resident, Deptt. of Orthopaedic Surgery.

dual to other and give idea about the total personality of an individual. The factors assessed are : (a) Schizothymia (outgoing), (b) Intelligence (c) Emotional stability (e) Degree of dominance (f) Mood (surgery) (g) Super ego strength (h) Boldness (i) Sensitiveness (j) Degree of suspicion (k) Practical (n) Shrewdness (o) Worry (q_1) conservatism (q_2) Dependence (q_3) Self image (q_4) Tension.

The test comprised of questions pertaining to the above mentioned factors. Three alternative answers of each question were provided and patient was asked to mark the most appropriate answer. Form in Hindi was used. In literate persons, test was first explained verbally and then they were asked to answer the questions in 40 minutes though no absolute time limit was kept. In cases of illiterate and bed-ridden patients, test was given verbally and psychologist himself marked the subject's response appropriately on the answer sheet held by him. Scores for each factor were converted into STEN score i.e. the scale in which score between five and six is average and rest of the scores are interpreted according to the manual. For the conversion of STEN score and interpretation, help of standardised manual was taken which measured it in an objective manner.

OBSERVATIONS

Eighty patients of cervical spondylosis were evaluated psychologically and results were compared with those of 60 normal persons. Age, sex, marital status and occupation were similar in both groups. Incidence of clinical cervical spondylosis was more in females especially housewives and sedentary patients. There was a gradual decrease in incidence after third decade.

The main symptoms were pain in neck and shoulder (83% each), pain in upper limb (73.6%) and restriction of movement of neck (64.6%). One case had difficulty in swallowing mainly for solids. On clinical examination restriction of neck movements was present in 92.5% cases, followed by spasm of muscles and tenderness in 75.8% cases.

56.5% cases had radiological evidence of spondylosis in form of narrowing of disc space (C_{5-6} in 51.1% cases and C_{5-7} in 28.8% cases) along with osteoarthritis of diarthrodial joints of cervical spine and narrowing of intervertebral foramina. Remaining 43.5% cases did not show any evidence radiologically which could account for their symptom complex.

Comparison of eighty patients with sixty normal persons revealed that 88.6% patients of cervical spondylosis were emotionally unstable, dissatisfied from their occupation, tense, anxious, worried and unable to keep contact with their surroundings. Although there was much difference in the psychological status of the two groups, but it was not definite whether these findings were the cause of symptoms or the effect of symptoms.

Further comparison of 56.5% cases of cervical spondylosis who had radiological evidence of disease with the normal persons showed that in addition to the emotional instability, dissatisfaction from occupation, poor practical attitude and such patients were more shrewed, sophisticated and polished.

A comparison of 43.5% cases who had no radiological evidence of disease with the normal persons, showed that these patients too were emotionally unstable, impractical and less-bold, worried individuals with a high degree of dependence on others.

Comparison of the psychological status of the patients with radiological changes and those without them revealed that there was no significant difference except one or two personality traits.

DISCUSSION

In the present series eighty patients of cervical spondylosis were studied clinically, radio-

logically and psychologically to ascertain the factors responsible for their symptoms. Though 56.5% cases showed radiological evidence of degenerative changes in cervical spine, but severity of their symptoms could not be well co-related with their radiological picture. Also, symptoms in 43.5% cases, in whom no radiological evidence was there, could not be explained, therefore, an attempt was made to determine some factor which may be acting in both group of patients and may be responsible for their symptoms. However, these patients were subjected to psychological evaluation to determine any psychological disturbances and to understand them more clearly, results were compared with the normal individuals.

The evaluation revealed psychological disturbances of neurotic tendency in 88.6% cases of cervical spondylosis and there was a definite indication that these were responsible for the symptoms.

The mind is not created independently of the body but it is very definitely linked with it, when feelings and thoughts are not expressed by words or action, they find expression through some organ or organ system. Thus, headache beginning in the back of head, referred to neck and sometimes extending down to the back or into shoulders often represents tension expressed in neuromuscular system (Edward and Spurgeon, 1958). Anxiety, which can make its effects in any part of the body, may manifest as headache and pain in neck, thus simulating cervical spondylosis.

Psychological evaluation of every cervical spondylosis patient should be done by a psychiatrist to determine any psychological disturbances. Understanding and appropriate treatment of such disturbances coupled with the conventional physical methods of treatment in cervical spondylosis can alleviate the symptoms and even cure the most resistant cases.

REFERENCES

1. **Wilkinson, M.,** Symptomatology cervical spondylosis. Second Edition, 59-67. William Heinemann, London, 1971.
2. **Edward, W. and O. Spurgeon, E.,** Psychosomatic Medicine, a clinical study of psychological reactions, 3rd Edition. W. B. Sounders Company, 1958.

A Clinical Study of 588 Rural Based Locomotor Disabled : Camp Study

RATNESH KUMAR[1], A. K. BAJPAYEE[2], A. K. AGARWAL[3]
District Rehabilitation Centre, Sitapur
Deptt. of Physical Medicine & Rehab. K. G.'s Medical College, Lucknow

Disabled camps were organised in ten rural blocks of Sitapur, Uttar Pradesh to provide the modern rehabilitation services. 588 Locomotor handicapped were evaluated in detail. Males were four times more than the females. Two third of disabled seen were below 17 years of age. Polio affected disabled were maximum (407) besides, followed by spastic (66) and amputees (37). Out of 407 polio cases, 224 were having contracture of one or more joint and 147 cases were found suitable for orthosis. The reconstructive surgery was advised in 175 cases prior to fitment of orthosis/prosthesis.

INTRODUCTION

More than 53 lacs people of our country are having locomotor disability (National Census, 1981) and thus represent 38.4% of total disabled. 42.4 lacs of locomotor handicapped (80%) are residing in rural India, where rehabilitation services are negligible. Recently a concept of community based comprehensive rehabilitation for disabled at door step has been developed.

Since the district level infrastructure is still in phase of development, the only method available, is to mobilise, expertise to rural areas through the camp approach. With this philosophy in mind, rural camps in ten different blocks were organised in the last two years through District Rehabilitation Centre (DRC), Sitapur. It was aimed to study incidence and clinical picture of locomotor disabled in rural areas, to find out material/management need and to have base line data for development of need based rehabilitation services.

[1]Medical Officer (Rehab.)
[2]Project Officer
[3]Senior Medical Officer cum Reader

MATERIAL AND METHOD

Ten screening camps were organised in ten different rural blocks of district Sitapur of Uttar Pradesh (India). They were arranged on prefixed date and location (arranged at Central and approachable location of the block). Local resource, manpower and pamphlet were used to dessipate the information about scheduled date and location of camp. All types of locomotor disability irrespective of cause, age and sex were included in the study.

To collect various biosocial details, a standard pretested schedule was used. Their detailed evaluation of disability was done. The measurements were arranged for orthosis and prosthesis on the spot.

OBSERVATION

A total of 588 locomotor disabled attended those 10 camps during the period of March, 1986 to March, 1988.

The cases were aged from one year to seventy years as shown in Table No. I. The maximum No. of cases were in the first decade of life (49.5%) followed by cases between 11-17 years. Disability among males (79.9%) was four times higher as compared to females (20.1%). In the age groups below 17 years the male/female distribution was 4:1 while in the upper age group (17+) the prevalance was six times higher among males.

Table I. Distribution of study population in relation to age and sex

Sex/ Age (Yrs.)	0-5	6-10	11-17	18-35	36+	Total
Male	85 (18)	139 (29.6)	95 (20.2)	106 (22.6)	45 (9.6)	470 (79.9)
Female	28 (23.7)	39 (33.1)	28 (23.7)	15 (12.7)	8 (6.8)	118 (20.1)
Total	133 (19.2)	178 (30.3)	123 (20.9)	121 (20.6)	53 (9)	588 (100)

Among paralytic disability—Poliomyelitis (407) was found to be commonest (69.2%) followed by spastic cases (11.2%), which included hemiperesis (stroke), paraperesis and cerebral palsy etc.

In childhood disability, Poliomyelitis was maximum, followed by cerebral palsy (34) in number. Four cases of post injection radial nerve palsy were also seen. Amongst 41 cases (7%), 37 were of amputation and 4 were of congenital limb deficiency. 21 out of 31 cases of congenital deformity group were of talipes equinovarus. None of the female reported with limb deficiency or amputation.

The distribution of amputee cases in relation to age and sex was shown in the table No. II. All the cases, except two were having single extremity involvement. 29 cases (67.4%) were aged above 18 years against 14 cases (32.6%) below 18 years of age.

Table II. Distribution of cases in relation to etiology

Sex/Type	Male		Female		Total	
	No.	%	No.	%	No.	%
Poliomyelitis	313	76.9	94	23.1	407	69.2
Amputee	37	100	—	—	37	6.3
Spastic	55	83.3	11	16.7	66	11.2
Ankylosis	21	84.0	4	16.0	25	4.3
Cong. deformity	24	77.4	7	22.6	31	5.3
Miscellaneous	20	90.9	2	9.1	22	3.7
Total	470		118		558	100.0

Among upper extremity amputees, right and left were equally affected (10 and 12 respectively). Left above elbow amputees were three times more as compared to right sided one. Whereas right sided below elbow amputees were two times more to the left sided below amputees. There were 17 cases of below knee amputation against only 4 cases of above knee amputation (Table No. III/IV).

The distribution of 407 Poliomyelitis cases shown in the Table No. V. Five cases having more than one extremity involvement have been included twice thus making, a total of 412.

Table III. Distribution of amputees/congenital deficiency cases in relation to anatomical level and age

Anatomical level/Age	0-5	6-10	11-17	18-35	36+	Total
Upper Extremity (51.2%)						
Above Elbow	—	1	1	4	3	9
Below Elbow	1	2	4	5	1	13
Lower Extremity (48.8%)						
Above Knee	—	—	1	2	1	4
Below Knee	—	1	3	6	7	17
Total	1	4	9	17	12	43

It includes cases of congenital limb deficiency. Two cases were having more than one limb involved.

Table IV. Distribution of amputee cases—Anatomical level in relation to side affected

Anatomical level/ Side	Right		Left		Total	
	No.	%	No.	%	No.	%
Upper Extremity						
Above Elbow	2	22.2	7	77.6	9	20.9
Below Elbow	8	61.5	5	38.5	13	30.2
Lower Extremity						
Above Knee	1	25.0	3	75.0	4	9.3
Below Knee	10	58.8	7	41.2	17	39.5
Total	21		22		43	100.0

Table V. Distribution of Poliomyelitis cases in relation to age, sex and extremity affected

Anatomical part/ Age (sex)	0-10		11-17		18 & above		Total	
	M	F	M	F	M	F	M	F
Upper Extremity								
Right	4	1	3	1	1	—	8	1
Left	2	2	1	1	—	—	3	3
Lower Extremity								
Right	57	18	21	4	19	—	97	22
Left	66	25	27	6	15	2	110	33
Bilateral	65	23	21	9	12	5	98	37
Total	196	69	73	20	47	7	316	96

Above Table includes cases, one of bilateral upper extremity, two each of one upper and bilateral lower and one upper and one lower extremity.

Cases were aged from one to forty nine years. Upper extremity involvement was in 3.4 percent only. Out of 393 lower limb involved cases, unilateral and bilateral involvement were in 262 and 135 cases respectively. Right and left lower extremities were affected in 119 and 143 respectively.

Out of 407 polio cases, 224(38.1%) were having soft tissue contractures and deformities. The hip, knee and ankle joints were deformed in 159, 112 and 146 cases respectively. Unilateral hip joint contracture deformity was commonest (90). The contracture was more common in the cases aged above 6 years.

Table VI. Material/Management need of disabled

Management/ Type	Paralytic	Amputee	Ankylosis	Neurological	Other	Total
Orthosis	138	—	—	4	5	147
Prosthesis (Ortho/ modified shoe)	9	34	2	1	9	55
Reconstructive surgery	152	2	2	1	18	175
Mobility Aids (Axi. Cr./Tricycle Wheelchair)	50	5	11	8	9	83
Physio/Occupational Therapy	55	—	6	30	34	125

Out of the management planned, only first and foremost has been presented in the Table. If a case was advised both orthosis and crutches, then he has been shown here in the column of orthosis only. 147 cases were found suitable for orthosis measurement. Out of 41 amputees 34 were found suitable for prosthetic measurement. 175 cases (29.8%) were subjected for reconstructive surgery prior to fitment. 125 cases including 55 polio cases were provided with different modelities of treatment of Physical Medicine.

DISCUSSION

In the present study, incidence of polio and amputee are 69.2 and 6.7 percent respectively against the observation of Agarwal & Goel who have conducted similar camps at Meerut in 1978. They have reported lower number of polio cases (33.5%) and higher number of amputees (49.3%). The reasons may be due to socio-geographical variation and due to rapid mechanisation in agriculture in western Uttar Pradesh. Our observation of four times higher incidence of disability in males is practically similar to Agarwal & Goel (1978). The

maximum number of amputees were in the age group 18-35 years, due to more activity and exposure in this phase.

Three to four times higher incidence of poliomyelitis in males can be explained by psycho-social factors in our society. In our male conscious society, sons in preparalytic stage are given heavy massage, frequent injection and more manipulation by village quaks thus giving more harm to the male child.

Lower extremity was affected 26 times more than the upper extremity by polio. Observation is significant and similar to other studies of Punatar et al. (1977) & Sanchetti et al. (1983). The higher prevalance among early age group supports to the established fact that poliomyelitis is a disease of early childhood. In our study more involvement of dorsiflexors and inverters of ankle were found similar to others like Punatar et al. (1977), Mercer et al. (1978) and Kush Kumar et al. (1988).

We have noticed that in more than fifty percent of poliomyelitis cases, there was soft tissue contracture and deformity.

Hence only 34% polio cases were found suitable for orthosis against the observation of 47.3% by Agarwal & Goel (1978).

A serious thought must be given to achieve success in rural area.

In view of above obsevations, we recommend the following :—

—Community awareness and their participation in Rehabilitation programme should be encouraged.

—Preventive aspect besides early intervention should be stressed through primary health care delivery system.

—Medical and reconstructive surgical services need to be equally stressed in 'comprehensive rehabilitation services for the disabled'.

—The non government organisations (NGO) should come forward to participate in the rural disabled camps.

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REFERENCES

1. **Agarwal, A. K. and Goel, M. K.,** "Problems in the Rehabilitation of the physically handicapped in rural areas of India". Prosthetics & Orthotics International 2, 27-29, 1973.
2. **Basu, R. N.,** "Magnitude of problem of poliomyelitis in India". Ind. J. Paed. 18, 507, 1980.
3. **Kush Kumar and Kapahtia, N. K.** "Pattern of muscle involvement in lower limbs in poliomyelitis". Ind. J. Orthop. 22, 138-43, 1988.
4. **National Sample Survey Organisation,** "Report of the survey of disabled persons". 36th Report July-Dec., 1981, No. 305, Department of Statistics, New Delhi, 1983.
5. **Punatar, B. and Patel, D. A. :** "Pattern of residual paralysis in poliomyelitis". Indian J. Orthop. 11, 174, 1977.
6. **Sanechetti, K. H., Sahasrabudhe, B. G., Hingre, R. K. and Electricwala J. K.,** "Clinico-environmental profile of residual paralytic poliomyelitis—An epidemiological case study". Pune Sanchetti Institute of Orthopaedic Education and Research, 1983.

Rehabilitation of the Elderly—An Indian Approach

DR. AJIT K. VERMA[1], DR. K. K. SINGH[2]
Department of Physical Medicine & Rehabilitation, Patna Medical College Hospital, Patna

INTRODUCTION

The old age can not be regarded as a disease or infirmity. It is a biological process, normal, inevitable phenomenon. The early Roman pessimistic concept does not hold good in Modern Medicine. We have to protect it, promote it and extend it. Then question arises, are we aware of this ? Are we having any rehabilitation services for the elderly ? Is there any national approach ?

APPROACH

Care of elderly in India has been assessed differently from that in the western countries because of the special Indian conditions and social habits which are as under :—

(a) Extended family system.
(b) 80.06% Rural Population with agricultural base.
(c) Low literacy.
(d) Problem of unemployment.
(e) 5-10 years of gap between pre-vocational, vocational and job placement.
(f) Early retirement age.
(g) Lesser longevity.
(h) Less of mechanisation.
(i) Squatting habit—Living on floor.
(j) No clinical past history.
(k) No clinical records/No drug monitoring.
(l) No follow up.
(m) Different ADL—use of Datun & drawing water from well, etc.

Let us look into the elderly problems. These are multifactorial and multidimensional covering mental, physical, socio-cultural and economic aspect. However, these problems are universal in nature. Mental problems are acute. A certain degree of biological regression is an inevitable consort of advancing years. As physical health goes down the mental urge for recreation, sympathy and acceptance grows higher. India has got a different tradition, custom and ecology. The respect of aged, their shelter and care by the younger once are gradually being eroded, more marked in urban population. The economic insecurity in urban population is largely due to

(a) Increasing nuclear family system.
(b) Increasing cost of living.
(c) Scanty benefits offered to aged by government.
(d) Social indifference and apathy.

At our centre the rehabilitation of the Geriatric patients have been on the above lines and besides the medical services rendered, the services of Govt., voluntary and social agencies as well as the family were also involved.

We have tried this approach and our results were as follows :—

The questionnaires were put to the patients and their family members as to their

(a) Physical problem ?
(b) Mental attitude ?
(c) Any financial constrain ?
(d) About social maladjustment ?

For every problem concerning physical,

[1]Resident Surgeon.
[2]Director & Professor.

mental, social and financial, 3 points were deducted from the score. Similarly 3 points were added to the score if there were no problem. Thus a score-board was prepared accordingly from this format.

58% of the cases expressed their economic insecurity. 18% of them had also some sort of social maladjustments. 52% of them had physical problems and 27% with mental concern.

Table I. Format of questionnaire

Name	Age	Sex	Address	Code No.	Problem	Score
					Physical	—
					Mental	—
					Social	—
					Financial	—
					Total	—

Table II. Sex incidence and age group

Age (years)	Male	Female
60-65	28	18
65-70	33	8
70-75	19	4
75-80	4	5
80 (+)	Nil	1
Total	84 (70%)	36 (30%)

Table III

Rs. in month	Socio-economic	Character
0-350	6	(5%)
350-750	72	(60%)
750-1000	36	(30%)
Above 1000	6	(5%)
Total	120 cases	

Table IV

Percentage of studied group	
Physical ailment	52%
Economic insecurity	58%
Social maladjustment	18%
Mental concern	72%

Average aged Indian comes under both medically and economically deprived groups. Medically he is prone to such diseases, which if not recognised in time may become chronic in nature and without timely recognition and proper treatment may also result in secondary complications. In the wake of urbanisation and industrialisation, shift of the population from rural to urban areas and with break-up of conventional joint family system to nuclear family system, it is becoming imperative that we should start planning rehabilitation services for the people, who will be entering or have entered the old age to which at times, we refer to as third age.

DISCUSSION

Over the centuries elderly in our country, by and large have a place of honour in the society. They are precious asset for the country. There is no National Policy on this vital issue of great significance. The responsibility of the state toward the senior citizens is enshrined in the constitution of our Republic. We are also party to the Vienna International plan of action adopted by the United Nations World Assembly on aging. The principle and goals set out in these documents can be achieved, if little effort is made.

SUGGESTED POLICY

Therefore, it is recommended that the Indian approach to Rehabilitation of the elderly should be that :—

—All the senior citizens be covered by a compre-

hensive health care programme. The strategy for this programme shall be preventive, early diagnosis of diseases and an integrated health care system with the primary health centres—which is the existing infrastructure for primary health care in rural areas.

—Paramedical personnel be imparted an orientation programme to deal with elderly at community level.

—Home care or community support system should be adequately strengthened, it offers cheaper and psychologically, superior services when compared to institutionalised care.

—Elders be given priority for protection and relief in times of distress and natural calamities.

—To formulate and implement a comprehensive social security programme both in the unorganised and organised sectors.

—A sound National policy for the guidance of agencies is needed to give direction to the mental health services for the elderly. We do not have, what might be termed as "comprehensive mental health care system for the elderly". Instead, what we have is a fragmented patchwork compounded by diverse regional and local programmes (public and private) that have evolved with minimal consideration of whether they are responsive to the mental health needs.

—Formulation and planning about the economic security of aged persons according to increasing cost index and improvement in the post-retirement pension scheme.

—Part time job be given to such elderly who are otherwise physically fit and can fruitfully contribute in number of activities. This will ease the economic situation and at the same give an opportunity to remain engaged in some occupation.

—Legislative security to older persons so that they are not left out of the family.

—Old age pension be enhanced and eligibility criterias for the same may be liberalised. A scheme of insurance should be introduced in the unorganised sectors in order to meet financial and health needs of elderly.

—Special day centre be provided for aged with hobbies, course literature, physical therapy etc.

—Continuous surveillience as the needs of elderly people are likely to multiply and change. Implementation strategy should be there through "National Board for care of the aged." It should be set on the lines of National Children's Board in order to pursue the National policy on the rehabilitation of the elderly. It is equally important that the problems of the elderly should be made aware among policy makers, administrators, planners and paramedical personnel. Mediums of seminars, workshop and mass media should be fully exploited and a National day for the aged may be observed each year.

REFERENCES

1. **Moudgil, A. C.,** Meeting Mental Health needs of the elderly N-24-N-29. Proceedings International Conference, Health Policy, Ethics & Human Values.
2. **Rusk, H. A.,** Rehabilitation Medicines, 4th ed, 643-652.
3. **Singh, K. K. & Goyal, H. C.,** Care of the elderly, the infirm and mentally retarded H-30, H-36 Proceedings International Conference, Health Policy, Ethics and Human Values.
4. **W. H. O.,** Services to prevent disability in the elderly.

General Principles of Treatment of Rheumatoid Arthritis

DR. A. N. MALAVIYA
Deptt. of Medicine, All India Institute of Medical Sciences, New Delhi

INTRODUCTION

Over the past 10 years or so there has occurred a 'quiet' revolution in the approach to treatment of rheumatoid arthritis. However the majority of the practitioners of modern scientific medicine seem to be unaware of this. The pessimism that 'there is no treatment of rheumatoid arthritis' still persists. The fact, however, is that upto 95% of the patients can be given remission with the judicious use of the "anti-rheumatoid" drugs which seem to be specific for rheumatoid arthritis.

In this short review I shall outline the general principles of the management of rheumatoid arthritis in the light of the present day knowledge.

Five Components of the Management of Rheumatoid Arthritis (RA)

Huskisson (1984) has simplified the management of RA by outlining its 5 major components. These include :—

1. Correct diagnosis.
2. Relief of symptoms.
3. Slow acting disease modifying anti-rheumatoid drugs. (DMARD)
4. Surgical intervention.
5. Physical therapy and rehabilitation.

It must be mentioned that these modalities of treatment are not mutually exclusive and they must be carried out as and when required, simultaneously.

1. Correct diagnosis

Till recently there has been widespread controversy with regard to the diagnosis of RA. The criteria of American Rheumatism Association have been mentioned for diagnosis without going in their depth and without careful attention to the 'exclusions'. Moreover, it is now realized that the histopathology of synovium is really not always specific for rheumatoid arthritis. Therefore, the recent trend is to narrow down the clinical entity of rheumatoid arthritis using the following RESTRICTIVE definition (Bitter, 1984) :—

PERSISTENT SYMMETRICAL, EROSIVE AND/OR SEROPOSITIVE POLYARTHRITIS MEANS RA

Any other clinical presentation would not qualify for the inclusion in the category of rheumatoid arthritis.

Special attention must be given to these differential diagnoses which closely mimic rheumatoid arthritis :—

a. Primary generalized osteoarthritis.
b. Psoriatic arthritis.
c. Different diseases within the category of seronegative spondarthritis including enterocolitic and unclassifiable varieties.
d. Collagen diseases in early stages.
e. Several rare conditions (sarcoidosis, multicentric reticulohistiocytosis, hyperlipidemia type II and IV etc.).

Making a correct diagnosis of RA is essential because the drug treatment of rheumatoid arthritis may not be effective in other varieties of arthritides.

2. Relief of symptoms

A. Non-steroidal anti-inflammatory drugs (NSAIDs)

The pain in RA joints is due to the presence of inflammation. Therefore, suppressing inflam-

mation by using NSAIDs is a main symptomatic treatment. There are 7 major classes of these drugs :—

1. Aspirin and its modified forms.
2. Propionic acid derivatives (e.g. ibuprofen and naproxen).
3. Mefanamic acid and derivatives (e.g. enfenemic acid).
4. Acetic acid derivatives (e.g. diclofenac).
5. Indane-indene derivatives (e.g. indomethacin, sulindac).
6.* Pyrazolone derivatives (e.g. phenylbutazone).
7. Oxicans (e.g. piroxicam).

(* This group of drugs are not used in RA any more.)

All of these drugs are potentially harmful where upto 30% patients show side-effects. Therefore, they must be given cautiously to elderly persons and children and they must be avoided in early pregnancy. Irrespective of their category, all of them have irritant action on gut mucosa causing peptic ulceration. Therefore, they must be given with meals and adequately covered with antacid therapy.

These drugs have several important drug interactions including those with oral anticoagulants, antidiabetic drugs, methotrexate, etc. and these combinations, therefore, must be avoided as far as possible.

The following points are therapeutically important in the use of these drugs:—

1. Which of these medicines will be optimally effective in a given patient CANNOT BE PREDICTED before hand. Therefore, a trial-and-error method is used where each of the above group of medicines can be used for 3-4 days by turn and then the most effective one for a given patient is found out.

2. The use of more than 1 NSAIDs does not add to their efficacy. Therefore, it is preferable to use one NSAID at a time. Sometimes, however, a long acting drug can be given in larger doses at bed-time to cover the 8 hrs. period of the night.

3. Due to reasons not clear, a major proportion of the total dose of the NSAID given at bed-time seems to work better than in equally divided doses given round-the-clock (except in Piroxicam, where it is effective when given at any time of the day).

4. All the NSAIDs cause fluid and sodium retention to a varying extent. Therefore, their use in cardiac failure and renal diseases with fluid and sodium retention must be avoided (the exception is sulindac which does not have this problem). Diuretics are usually ineffective in controlling this problem.

B. Local corticosteroids

For acute symptoms in one or a few joints, injection of local corticosteroids could be extremely useful and highly recommended. However, a maximum of 3 injections can be given in a joint. Repeated injections must be avoided as it can lead to weakness of joint ligaments and produce secondary osteoarthritis. Use of disposables has markedly reduced the danger of local infection.

C. Anti-depressants/muscle relaxents

One of the reasons for morning stiffness in RA is pain-spasm-pain-spasm cycle in the muscles. It has been found that antidepressant drugs like amitriptyline, doxepin or imipramine can be extremely useful in relieving the morning stiffness. An additional benefit in its use is in the relief of depression, which is present in a majority of the patients of RA. Antidepressant drugs thus work as an important adjunct to NSAIDs in the control of symptoms in RA and they must be used regularly in this disease.

D. Other measures

(i) *Local heat or cold :* Relief of symptoms can be obtained sometimes by cold compression of the joints if the local inflammation is

very acute. On the other hand chronic inflammation with marked stiffness may be relieved by slow heat (like wax-bath).

(ii) *Rest and exercise :* In acute stage of RA, complete rest can be very beneficial. On the other hand adequate exercise intersperced with optimum rest would be ideal for a chronic case.

(iii) *Diet :* Most of the patients with RA have poor appetite and do not eat well. Therefore, properly balanced and paltable diet with adequate vitamin and mineral supplementation is essential.

3. Disease modifying anti-rheumatoid drugs (DMARDs)

This category consists of a diverse group of drugs which are not anti-inflammatory. They belong to wide groups of compounds several of them having a thiol ring, others may have cytotoxic property while still others may have some other property. They seem to work in RA, but not in several other chronic inflammatory polyarthritides. Their exact mode of action is not known. These drugs can be classified into 3 categories :—

Group-I

Drug of proven value and widely used (in developed countries as well as in advanced centres in India):—

1. Gold salts (sodium thioauromalate and thioauroglucose, Auranofin)
2. D-Penicillamine
3. Chloroquine
4. Cyclophosphamide
5. Methotrexate
6. Azathioprine
7. Sulphasalazine

Group-II

Clinically active drugs under continuing investigation :—

1. Combinations of the above drugs
2. Levamisole
3. Captopril and other thiols compounds
4. Dapsone
5. Fenclofenac
6. Thymopoetin
7. Zinc
8. Cyclosporin-A

Group-III

Treatment modalities still at experimental stage :—

1. Plasmapheresis
2. Selective cellular centrifugation
3. Thoracic duct drainage
4. Total lymphoid irradiation (TLI)
5. Antilymphocyte globulin
6. Methylprednisolone pulsing
7. Interferon

Increasing knowledge about the use and the effect of these DMARDs in RA has been a major advance in the over all management of RA over the last 10 years. These drugs act slowly and show their effect only after 12 weeks or so and in case of one drug (chloroquine) only after 24 weeks or so. However, sulfasalazine may show its effect in as short a period as 8-10 weeks. These drugs modify the course and induce remissions in RA. Even the healing of bony erosions have been shown to occur with the use of gold and cyclophosphamide.

There are a few important points with regard to the use of DMARDs. Firstly, most of them are potentially toxic drugs requiring careful monitoring. These drugs must be used with extreme caution and by those who are experienced in their use. One must know their side effects and the way to manage them. Secondly, one can neither predict the effectiveness of any of the DMARDs nor their side effects in a given patient. Therefore, like NSAIDs, one has to do trial-and-error to find the optimal DMARD for a given patient. Such a DMARD would not produce any side effect and yet, lead to remission of RA. Obvi-

ously, because of the slow onset of their action, it may take several months to years before the suitable DMARD can be found for a given RA patient. This is a CRUCIAL POINT FOR THE UNDERSTANDING OF THE DRUG TREATMENT OF RA. This prolonged period when the DMARD has yet to start its effect must be adequately covered with symptom relieving agents. This is the period when some patients may loose hope of recovery and leave the treatment half-way. Reassurance and patient education helps in persuading the patients to continue the treatment till adequate trial of DMARDs has been given.

Till recently it was widely believed that DMARDs cannot and must not be used in any combination. The principle still holds true in most of the situations. However, recent work suggests (Bitter, 1984) that in extremely resistent RA cases some combinations of RA like gold plus chloroquine, gold plus D-penicillamine, gold and methotrexate, or cyclophosphamide, azathioprine and chloroquine may induce remission without any undue toxic effects. But this approach must still be considered experimental.

The other important points to keep note of are, first that till the disease goes in remission all the drugs i.e. NSAIDs, anti-depressants and DMARD must continue simultaneously. The second point is with regard to the maintenance therapy with DMARDs. Once remission is achieved, most of the symptom controlling drugs are discontinued, but DMARDs are continued for a long period of time usually, in a reduced dose. But, the question is to how long their maintenance dose should be given, remains unresolved.

4. Surgical Intervention

Minor or major surgical interventions are often needed simultaneously with the drug treatment. Surgical help may be needed even in the early stages of the disease e.g. minor excision of the lower end of ulna to help the free movement of involved wrist. Persistent single joint involvement may require synovectomy. Snapped tendons may need repair or deformed joints may need corrective surgery. The most important point to remember is that the surgical colleagues must be involved in the total management of the case right from the beginning. This would definitely avoid the undue delay in surgery when it is required.

5. Physical Therapy

Like surgery, physical therapy also plays its role right from the beginning of the management of RA. Local cold compress or heat, rest and exercise have already been mentioned earlier. It is important to remember that exercise may not be good for an acutely inflammed joint. But, proper splinting of the joints at night in acute stage of the disease may go a long way in preventing contractures and deformities. Regarding exercise in general, non-weight bearing isometric contraction exercises are most suitable for RA joints. For optimal result and prevention of deformities involvement of physiotherapist from the start of the management is essential.

SUGGESTED FURTHER READING

1. **T. Bitter,** Definition and diagnosis of rheumatoid arthritis. A search for crisp, objective diagnostic criteria. SEAPAL Bull. **2** : 18-24, 1984.
2. **E. C. Huskisson,** PG lecture on treatment of rheumatoid arthritis. SEAPAL Meeting Bangkok, 1984.
3. **T. Bitter,** Combined disease modifying chemotherapy for intractable rheumatoid arthritis. Clinics Rheumat Dis. 10(2) : 417-428, 1984.

4. **A. N. Malaviya and K. M. Khan,** Rationalized systemic drug therapy for rheumatoid arthritis. Ind. Rheum. Assoc. Bull. 4(2) : 8-13, 1982.
5. **A. N. Malaviya, K. M. Khan and S. C. Tiwari,** Pattern of response to systematised drug therapy in rheumatoid arthritis in Indians. Ind. J. Med. Res. **77** : 686-696, 1983.
6. **A. G. Mowat,** Management of Inflammatory joint diseases. In "Oxford text-book of Medicine" Eds. D. J. Weatherall, J. G. G. Ledingham and D. A. Warrell. Oxford University Press pp. 16.51 to 16.62, 1984.

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