RESULTS

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Ninety patients clinically diagnosed as acute lumbo-sciatic syndrome were examined and randomly enrolled into this study.Thirty-two (35.6%) of these patients were females, whose ages ranged between 27-48 years (37.5±5.5). Fifty-eight (64.4%) were males, whose ages ranged between 27-52 years (37.7±7.5).

Patients were randomly allocated to three groups each comprising 30 patients. Each group undergone a different treatment programme for 6 weeks.

Group (I):

This group was considered as a control group, where no exercises were carried out by the patients.

This group included 10 females (33.3%), whose ages ranged between 32-43 years (38.3 ± 3.3) and 20 males (66.7%), whose ages ranged between 30-49 years (38.4 ± 7.2).

A- Radiological findings of the patients in group (I),

Table (1):

Table (1): Radiological findings of the patients in group(I)

No. of patients	range of age (years)	Salient X-ray changes	%
5	31 - 45	Scoliosis	16.7
13	37 - 49	Spondylotic changes	43.3
1	39	Spondylolisthesis (grade 1)	3.3
6	30 - 44	Narrow lumbar disc space(L_3-L_4, L_5-S_1)	20
5	32 - 45	Intact spaces and appendages	16.7

* Twenty - eight (93.3%) had flattening of their lumbar lordosis.

B- The duration of symptoms varied from 5 days to 10 days.

- Twenty patients (66.7%) had a history of previous attacks .

- Ten patients (33.3%) presented with acute onset of symptoms, while 20 patients (66.7%) had gradual onset.

-Twenty five patients (83.3%) had severe pain while 5 patients (16.7%) had moderate pain.

- Six patients (20%) had parasthesia in their lower limbs (2 patients in their right lower limb and 4 patients in their toes and sole of their feet).

C- Analysis of positive clinical findings of patients in group (I) on initial assessment, Table (2):

- Ten patients (33.3%) showed limitation of all movements

Table (2): Positive clinical findings of patients in group (I)

No.	Age.	Sex.	Movements restricted	Angle of sciatica		Neurological dysfunction		
				Rt.	Lt.	Hyposthesia	Muscle weakness	Reflex lost
1	30	M	all movements	–	70	———	*quadriceps(Lt.)	———
2	31	M	" "	40	60	L_3 (Rt.)	* " (Rt.)	———
3	31	M	all except rotation	–	60	———	———	———
4	32	F	" " "	–	60	———	———	ankle(Both)
5	32	M	all movements	65	–	———	*ant. tibial(Rt)	———
6	32	M	" "	60	60	———	———	ankle(Both)
7	32	M	all except rotation	–	55	L_5 (Lt.)	———	———
8	34	F	" " "	40	–	———	*hamstring(Rt.)	
9	36	M	all movements	70	60	S, (Lt.)	**calf (Lt.)	ankle(Lt.)
10	37	F	all except rotation	60	–	———	———	———
11	37	F	Flexion & extension	70	–	———	———	———
12	39	F	" & "	65	–	L_5 (Rt.)	*quadriceps(Rt.)	———
13	40	F	all movements	45	70	———	———	ankle(Rt.)
14	40	F	all except rotation	50	70	———	———	———
15	40	F	flexion & extension	50	70	———	*ant.tibial(Rt.)	———
16	40	M	all movements	–	70	———	———	———
17	41	F	all except rotation	–	70	L_4 (Lt.)	———	———
18	41	M	" " "	70	70	———	———	———
19	43	F	" " "	60	–	———	———	———
20	44	M	flexion & extension	60	65	L_5 (Both)	*ant.tibial(Both)	
21	45	M	all movements	40	40	———	———	ankle(Both)
22	45	M	" "	70	55	L_5 (Lt.)	———	———
23	45	M	" "	50	55	———	———	———
24	46	M	all except rotation	60	–	———	*hamstring(Rt.)	ankle(Rt.)

Table (2): Continued.

No	Age.	Sex	Movements restricted	Angle of sciatica		Neurological dysfunction		
				Rt.	Lt.	Hyposthesia	Muscle weakness	Reflex lost
25	46	M	flexion & extension	70	60	———	———	———
26	47	M	all movements	60	60	———	———	———
27	48	M	" "	—	45	———	———	———
28	48	M	flexion & extension	70	70	———	———	———
29	49	M	all movements	50	—	L_4 (Rt.)	** quadriceps(Rt.)	knee,ankle (Rt.)
30	49	M	" "	55	65	———	* ant.tibial(Both)	———

* grade 4. ** grade 3.

except rotation.

- Fourteen patients (46.7%) showed limitation of all movements.
- Six patients (20%) showed limitation of flexion and extension.
- Fifteen patients (50%) presented with bilateral sciatica while 15 patients (50%) presented with unilateral sciatica; the straight leg raising angle (SLR) ranged between 40°-70° (59.9° ± 9.6°).
- Eighteen patients (60%) presented with neurological dysfunction:

* Four patients (13.3%) had muscular weakness.
* Three patients (10%) had hyposthesia.
* Four patients (13.3%) had lost ankle reflex.
* Two patients (6.7%) showed motor, sensory and reflex dysfunction.
* Four patients (13.3%) showed motor and sensory deficits.
* One patient (3.3%) showed motor and reflex deficit.

Group (II):

These patients followed a flexion programme of treatment.

This group included 14 females (46.7%), whose ages ranged between 31-48 years (38.6 ± 5.9) and 16 males (53.3%), whose ages ranged between 30-50 years (38.2 ± 6.5).

A- Radiological findings of patients in group (II), Table(3):

Table (3): Radiological findings of patients in group(II)

No. of patients	Range of age (years)	Salient X- ray changes	%
3	35 - 45	Scoliosis	10
8	33 - 45	Spondylotic changes	26.7
2	30 - 44	Spond lolisthesis (grade 1)	6.7
11	33 - 50	Narrow lumbar disc space(L_2-L_3, L_3-L_4, L_4-L_5, L_5-S_1)	36.7
6	30 - 47	Intact spaces and appendages	20

* All patients had flattening of their lumbar lordosis.

* Seven patients (23.3%) had narrowing of one lumbar disc space, while 4 patients (13.3%) had narrowing of two lumbar disc spaces.

B- The duration of symptoms varied from 7 days to 15 days.

- Ten patients (33.3%) had a history of previous attacks.
- Twenty-two patients (73.3%) had severe pain, while 8 patients (26.7%)had moderate pain.
- Ten patients (33.3%) had parasthesia in their lower limbs: (4 patients in one lower limb, 3 patients in both lower limbs and 3 patients in their feet).
- Twenty patients (66.6%) had gradual onset of symptoms,while 10 patients (33.3%) had acute onset.

C- Analysis of positive clinical findings of patients in group(II), Table (4):

- Eighteen patients (60%) showed limitation of all movements.
- Six patients (20%) showed limitation of all movements except rotation.
- Six patients (20%) showed limitation of flexion and extension
- Twenty-one patients (70%) had unilateral sciatica, while 9 patients (30%) had bilateral sciatica; the (SLR) angle ranged between 40-70° (60 ± 9°)

- Seventeen patients (56.7%) presented with neurological dysfunction:

* Three patients (10%) had muscular weakness.
* Three patients (10%) had hyposthesia.
* Five patients (16.7%) had lost ankle reflex.
* Four patients (13.3%) presented with motor, sensory and reflex changes.
* One patients(3.3%) presented with sensory and reflex changes.
* One patient(3.3%) presented with motor and reflex changes.

Group (III):

These patients were assigned for the extension programme of treatment. They were 8 females (26.7%) whose ages ranged between 27-45 years (34.6 ± 7.1), and 22 males (73.3%), whose ages ranged between 27-52 years (36.7 ± 7.7).

Table (4): Positive clinical findings of patients in group (II):

No.	Age,	Sex.	Movements restriced	Angle of sciatica		Neurological dysfunction		
				Rt.	Lt.	Hyposthesia	Muscle weakness	Reflex lost
1	30	M	all except rotation	-	70	———	———	———
2	30	M	flexion & extension	-	60	L_3(Lt.)	———	———
3	31	F	all movements	40	60	L_5(Rt.), S_1(Lt.)	*Ant.tibial(Rt.) *calf(Lt.)	ankle(Both)
4	32	M	all except rotation	50	-	———	———	———
5	32	F	all movements	-	50	———	*quadriceps(Lt.)	———
6	33	F	" "	55	-	———	———	———
7	33	F	" "	60	-	L_4(Rt.)	———	———
8	33	M	flexion & extension	55	70	———	———	ankle(Lt.)
9	33	M	all movements	-	60	———	*Ant.tibial(Lt.)	ankle(Lt.)
10	35	F	flexion & extension	60	-	———	———	———
11	35	F	all movements	60	60	———	———	———
12	35	M	all except rotation	65	-	———	———	ankle(Rt.)
13	35	M	all movements	40	-	———	———	———
14	35	M	all except rotation	70	70	S, (Lt.)	**Calf (Lt.)	ankle(Blth)
15	37	M	flexion & extension	65	50	———	———	ankle(Both)
16	38	F	all movements	70	60	L_4(Rt.)	**quadriceps(Lt.)	knee(Rt.)
17	39	M	" "	70	-	———	———	———
18	40	F	" "	-	65	———	———	———
19	40	F	" "	70	65	———	*quadriceps(Lt.)	———
20	40	M	all except rotation	70	65	———	———	ankle(Both)
21	41	F	all movements	50	-	———	———	———
22	43	M	" "	-	70	———	———	———

Table (4): continued.

No.	Age.	Sex.	Movements restricted	Angle of sciatica		Neurological dysfunction		
				Rt.	Lt.	Hyposthesia	Muscle weakness	Reflex lost
23	44	F	all except rotation	-	50	L_3,L_4(Lt)	———	———
24	44	M	all movements	70	-	———	———	———
25	45	F	flexion & extension	-	55	L_5 (Lt.)	———	ankle(Lt.)
26	45	F	all movements	50	60	———	———	ankle(Both)
27	47	M	" "	-	65	S_1 (Lt.)	*Calf (Lt.)	ankle(Lt.)
28	48	M	" "	60	-	———	———	———
29	48	F	flexion & extension	70	-	———	———	———
30	50	M	all movements	40	60	———	**ant.tibial(Both)	———

* grade 4.

** grade 3.

A- Analysis of radiological findings of patients in group (III),

Table (5):

No. of patients	Range of age (years)	Salient x-ray changes	%
3	30 - 45	Scoliosis	10
10	31 - 49	Spondylotic changes	33.3
2	27 - 38	Spondyloly thesis (grade1)	6.7
6	31 - 52	Narrow lumbar disc space(L_3-L_4, L_4-L_5)	20
9	27 - 48	Intact spaces and appendages	30

* Twenty-seven patients (90%) had flattening of their lumbar lordosis.
* Five patients (16.7%) had narrowing of one lumbar disc space, while one patient (3.3%) had narrowing of two spaces.

B- The duration of symptoms varied from 4 days to 12 days.

- Four patients (13.3%) had a history of previous attacks.
- Eighteen patients (60%) had acute onset of symptoms, while 12 patients (40%) had gradual onset.
- Twenty-four patients (80%) had severe pain, while 6 patients (20%) had moderate pain.
- Seven patients (23.3%) had parasthesia in their lower limbs (one patient in both lower limbs,3 patients in their toes and soles and 3 patients in one lower limb).

Table (6): Positive clinical findings of patients in group(III):

No.	Age.	Sex.	Movements restricted.	Angle of sciatica		Neurological dysfunction		
				Rt.	Lt.	Hypothesia	Muscle weakness	Reflex lost
1	27	F	flexion & extension	-	70	———	———	———
2	27	M	all movements	-	70	———	———	ankle (Lt.)
3	28	M	all except rotation	70	60	———	———	———
4	28	F	" " "	60	-	———	———	———
5	29	M	all movements	-	70	———	———	———
6	29	M	" "	65	-	L_5 (Rt.)	* ant.tibial(Rt)	———
7	29	F	all except rotation	50	50	L_3 (Both)	** quadriceps(Rt)	———
8	29	M	flexion & extension	-	50	———	———	———
9	30	M	all movements	55	-	———	———	———
10	30	M	flexion & extension	-	50	———	* quadriceps(Lt)	———
11	31	M	" "	60	65	———	———	———
12	31	M	all movements	65	-	———	———	———
13	31	M	all except rotation	-	50	———	———	———
14	32	F	flexion & extension	70	-	———	———	ankle (Lt.)
15	32	F	" "	70	70	L_4 (Both)	———	ankle(Both)
16	33	M	all movements	-	60	———	———	———
17	36	M	" "	60	-	———	[illegible]	[illegible]
18	38	M	flexion & extension	-	70	———	———	ankle (Lt.)
19	39	F	all movements	65	60	S_1 (Lt.)	** calf (Lt.)	ankle (Lt.)
20	39	M	" "	55	-	———	* ant.tibial(Both)	———
21	40	M	flexion & extension	-	65	———	———	———
22	40	M	" "	60	-	S_1 (Rt.)	———	ankle (Rt.)
23	41	M	all except rotation	50	70	———	* calf (Lt.)	———

Table (6): Continued

No.	Age.	Sex.	Movements restricted.	Angle of sciatica		Neurological dysfunction		
				Rt.	Lt.	Hyposthesia	Muscle weakness	Reflex lost
24	44	F	all except rotation	-	55	——	* hamstring(Lt.)	——
25	45	F	all movements	60	-	——	——	——
26	45	M	all except rotation	60	-	——	——	——
27	46	M	flexion & extension	70	60	L_4 (Lt.)	* ant.tibial(Lt.)	ankle (Lt.)
28	48	M	all except rotation	60	-	——	——	——
29	49	M	all movements	-	65	L_3 (Lt.)	* quadriceps(Lt.)	knee (Lt.)
30	52	M	" "	55	-	——	* ant.tibial & calf (Rt.)	——

* grade 4. ** grade 3.

C- Analysis of positive clinical findings of patients in group (III) on initial assessment, Table (6):

- Twelve patients (40%) had limitation of all movements.
- Ten patients (33.3%) had limitation of flexion and extension.
- Eight patients (26.7%) had limitation of all movements except rotation.
- Twenty-three patients (76.6%) had unilateral sciatica, while 7 patients had bliateral sciatica; the (SLR) angle ranged between 50°-70° (61 $\pm$ 7°).
- Fifteen patients (50.1%) presented with neurological dysfunction:

* Five patients (16.7%) showed muscular weakness.
* Three patients (10%) had lost ankle reflex.
* Three patients (10%) presented with motor, sensory and reflex deficits.
* Two patients (6.7%) presented with sensory and motor deficits.
* Two patients (6.7%) presented with sensory and reflex deficits.

Review of patients after two weeks of treatment, Histogram (1):

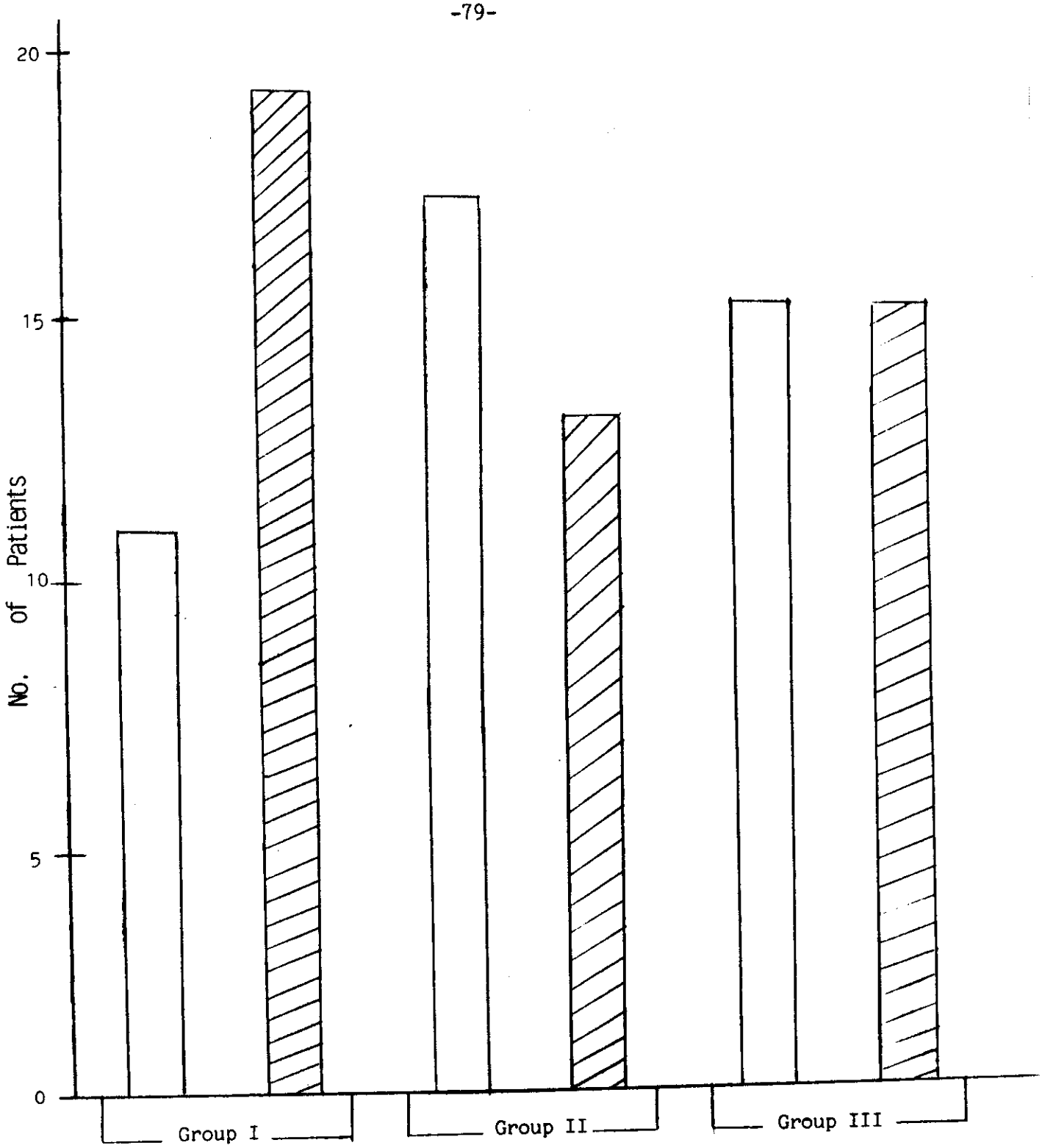
* Eleven patients (36.7%) of group (I), 17 patients (56.7%) of group (II) and 15 patients (50%) of group (III) showed:

1- Moderate to marked relief of pain.

2- Increase in the (SLR) angle.

3- Improvement of movements.

4- Decrease in muscle spasm.



Histogram (1): Review of patients after two weeks of treatment.

Improvement.

No improvement.

* Nineteen patients (63.3%) of group (I), 13 patients (43.3%) of group (II) and 15 patients (50%) of group (III) showed:

1- No relief of pain.

2- No change in the (SLR) angle.

3- Discomfort during movements.

4- Muscle spasm and tenderness.

Epidural steroid injection was indicated for patients in this category..

- **Review of patients after one weak following the epidural steroid injection**, Histogram(2):

* Nine patients (47.4%) of group (I), 5 patients (38.5%) of group (II) and 7 patients (46.7%) of group(III) showed no improvement.

* Ten patients (52.6%) of group (I), 8 patients (61.5%) of group (II) and 8 patients(53.3%) of group (III) showed:

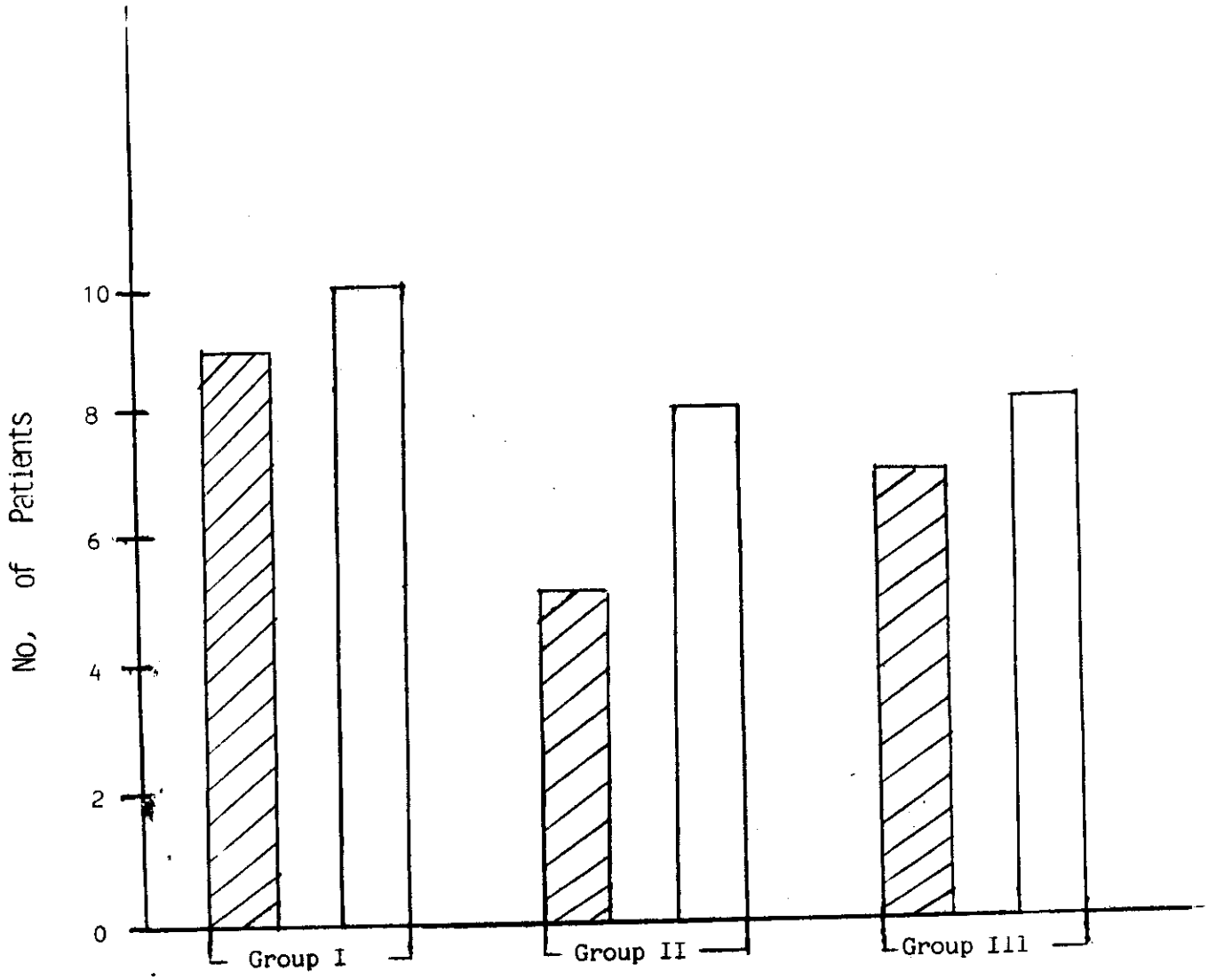
1- Moderate to marked relief of pain.

2- Increase in the (SLR) angle.

3- Free painless movements.

4- No muscle spasm.

- **Assessment and evaluation of all patients at the end of the treatment programmes (6weeks)**, Histogram(3):



Histogram (2): Review of patients after one week of epidural injection

No improvement.

Marked improvement.

Methods of assessment:

The following scheme was followed for the assessment of our results:

Excellent: * Complete relief of all symptoms and signs.
* The (SLR) angle > 85°.

Good : Incomplete relief of all symptoms but tolerable by the patient.
* The (SLR) angle 80-85°.

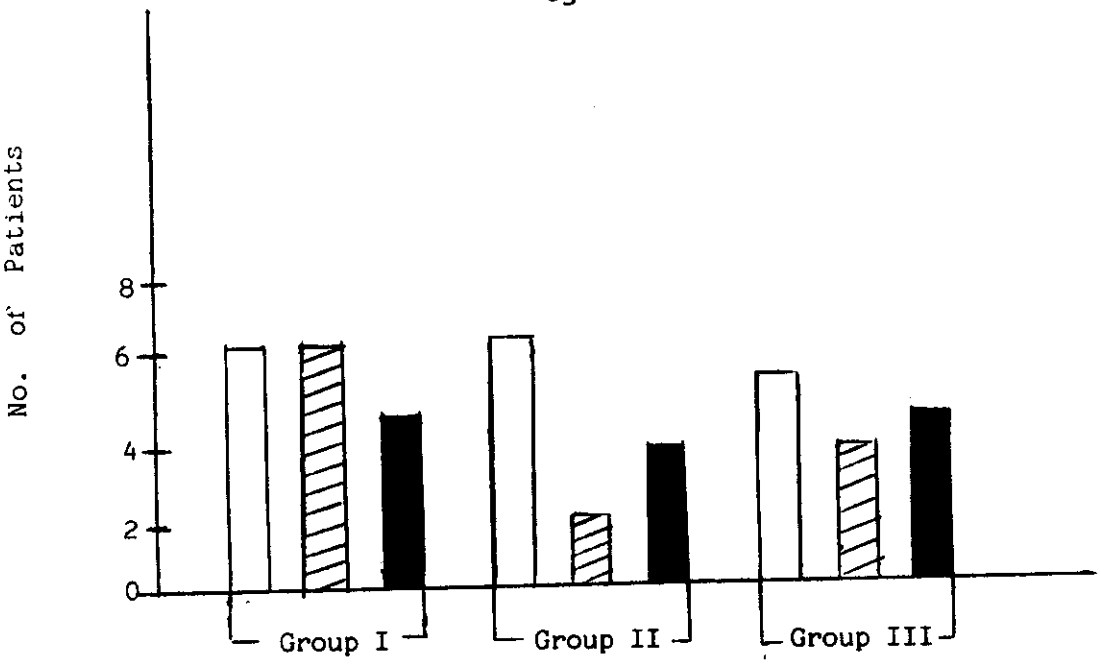
Fair : * No improvement at all.
* The (SLR) angle < 70°.

Group I:

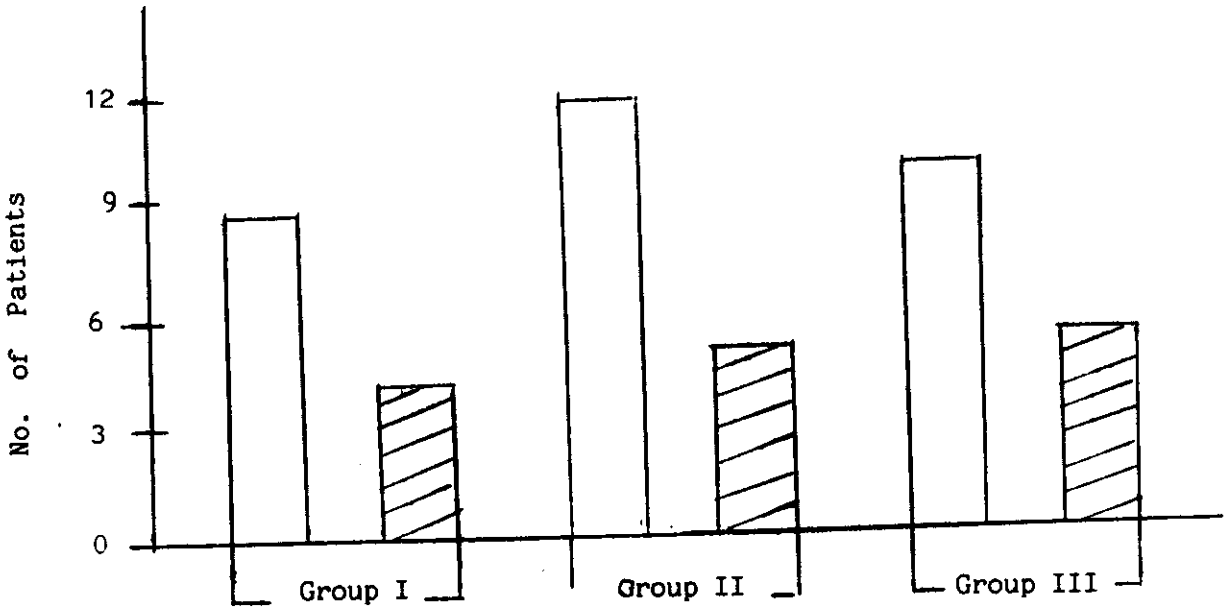
- Sixteen patients (53.3%) showed excellent results, of whom 7 patients (23.3%) had been given epidural steroid injection.
- Nine patients (30%) showed good results , of whom 7 patients (23.3%) had been given epidural steroid injection.
- Five patients (16.7%) showed fair results. All of these patients had been given epidural steroid injection.

Group (II):

- Nineteen patients (63.3%) showed excellent results, of whom 7 patients(23.3%) had been given epidural steroid injection.
- Seven patients (23.3%) showed good results, of whom 2 patients (6.7%) had been given epidural steroid injection.
- Four patients (13.3%) showed fair results. All of these patients had been given epidural steroid injection.



(a) Patients with epidural injection.



(b) Patients without epidural injection.

Histogram (3): The result of treatment after 6 weeks

Excellent results

Good results

Fair results

Group (III):

- Sixteen patients (53.3%) showed excellent results, of whom 6 patients (20%) had been given epidural steroid injection.
- Nine patients (30%) showed good results, of whom 4 patients(13.3%) had been given epidural steroid injection.
- Five patients (16.7%) showed fair results. All of these patients had been given epidural steroid injection.

Statistical analysis of the patients' outcome in the three treated groups:

Table (7): Analysis of the change in the of (SLR) angle between patients of each group before and after epidural injection:

Prog.Of ttt	No.of pats	Mean ± S.D.		Pvalue	Significance
		before inj.	after inj		
Control.	18	56.7° ±9.8°	79.5±13.7°	<0.05	Significant
Flexion	13	55.3° ± 8.5°	79.7±14.5°	<0.05	Significant
Extension.	15	57.9° ± 6.1°	76.4°±14.5°	<0.05	Significant

Table (7).

There is a significant difference in the (SLR) angle between patients of each group before and after epidural injection.

Table (8): Analysis of the change in the (SLR) angle between all groups

(A) Between patients given epidural injection

(B) Between patients not given epidural injection.

Prog.of ttt	No.of pats.	Mean±S/D	Control group	P value	significance
Flexion	13	$79.7^{\circ} \pm 14.5^{\circ}$	No. of pats. 19	< 0.05	Significant
Extension	15	$76.4^{\circ} \pm 14.5^{\circ}$	Mean ± S.D. $79.5^{\circ} \pm 13.7^{\circ}$	< 0.05	Significant
P value	< 0.05				
significance	Significant				

Table (8): A.

There is a significant difference in the (SLR) angle between patients of the control group and patients of the flexion and extension programmes given epidural injection.

Prog. of ttt.	No.of pats.	Mean ± S.D.	Control group	P value	Significance
Flexion	17	$86.8^{\circ} \pm 4.5$	No. of pats. 11	< 0.05	Significant
Extension	15	$87.5^{\circ} \pm 3.9^{\circ}$	Mean ± S.D. $88.8^{\circ} \pm 3.4^{\circ}$	< 0.05	Significant
P value	< 0.05				
Significance	Significant .				

Table (8): B

There is a significnt difference in the (SLR) angle between patients of the control group and patients of the flexion and extension programmes and between patients of the flexion programme and patients of the extension programme not given epidural injection.

Table 9: Analysis of the change in the (SLR) angle as an outcome of all the treatment groups.

Prog.of ttt.	No.of pats.	Mean ± S.D.	Control group	P value	Significance
Flexion	30	$83.8^{\circ} \pm 10.5^{\circ}$	No. of pats. 30	< 0.05	Significant
Extension	30	$81.9^{\circ} \pm 12^{\circ}$	Mean ± S.D. $82.8^{\circ} \pm 12^{\circ}$	< 0.05	Significant
P value	< 0.05				
Significance	Significant				

Table (9).

There is a significant difference in the (SLR) angle between patients of the control group and patients of the flexion progamme and between patients of the flexion and patients of the extension programme.