Gait re-education with Lokomat System in incomplete spinal cord injury in patients older than 65.

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Introduction.-

Acute spinal cord injury (SCI) incidence is increasing among elderly population (15%). **Non-traumatic etiology** and **incomplete** lesions have been reported to be more frequent. Also, elderly patients suffer more frequently **chronic pathology** associated. In other hand, increasing age conditionates: **impairment** of organic functions, **worse physical condition**, a lower **exercise response reserve**, and a higher **risk of falls**.

Lokomat System (LS) is based in the partial weight bearing discharge associated with the use of a treadmill and a robotic device that mobilizes lower extremities.

It is included in the group of gait re-education techniques that promote neuronal plasticity.

Intensity / weight bearing inducement and repetitive movements / atention

Advantages: Early initiation, training even if severe paresia is present ,speed and weight bearing can be adapted to individual characteristics of the patient, no overload of upper extremities.
All of them can produce a benefit also in elderly patients

Objetive.-

To determiante effectiveness of **Lokomat System®** in patients **older than 65** diagnosed of **Incomplete Spinal Cord Injury**

Method.-

A prospective and comparative study before and after treatment with LS / Intervention: Forty 30-minute sessions, 5 days per week

Assessment when treatmet was instaured, at a mid point, and at the end.

Statistical analysis with program SPSS 17.0. Paired and independent meand comparison p ≤0,05

Outcome measures:

Demographic and lesion data / Lower extremity muscle strength (LEMS) / SCIM II (Spinal cord independence measure) / WISCI II (Walking Index Spinal Cord Injury)

Inclusion criteria:

Age: 65 or older / SCI level: C2-L3 / ASIA B-C-D / Less than 6 months of evolution /Development of usual program treatment in our institution / Signed informed consent

Results and discussion.-

49 patients met inclusion criteria in the authors´ institution from 2007 to 2016.
Five casses were lost because of reasons not related with the study

Edad	Sexo	Nivel	Extensión		Tiempo de evolución	
			Inicial	Final	Traumática	Médica
70,3 (DS 4,7)	32 hombres	C1-C8	16	26 C	10 C	130,6 (DS 59,8)
(65-84)	12 mujeres	D1-D6	7	16 D	33 D	112,8 (DS 66,1)
		D7-D12	15	2 B	1 B	
		L1-L3	6			

Non traumatic etiology was the most frequent

Comorbidity was very frequent and a high incidence of complications was reported during the program.

But no complications related with the use of LS were reported.

Etiología	Pat Crónica	Complicaciones	
Traumática 15	Sin interés	1	Sin complicaciones 5
Médica 29	Cardiorespiratoria	5	Cardiorespiratorias 6
	Ortopédica 1		Ortopédicas 1
	Neurológica	1	Neurológicas 1
	Digestiva	1	Digestivas 3
	Urológica	1	Urológicas 11
	Más de 3 33		UPP 3
			Más de 3 14

Significative differences were found in every variable analysed with better results if treatment was started 3 or less months after lession.

Functional results were reported as poor, despite high incidence of incomplete SCI, and this finding has been related with previous physical condition, and chronic patholgies commonly associated that hinder physical tratment programs. Longer training times are usually needed in this group of patients.

The high variability in personal conditions in this group of age makes very difficult the development of clinical controlled assays, and adapted programs in time and age are to be developed.

	LEMS	SCIM III	WISCI II
Inicial	25 (DS 11,7)	34,9 (DS 13,8) 7,2 (DS 4,2)	2,2 (DS 2,3)
Final	32,3 (11,5)	53,5 (DS 20,5) 14 (DS 6,7)	8,7 (DS 6,6)
P*	0,00	0,00 0,00	0,00

* Independent means comparison

Mejoría	N	LEMS	SCIM III	WISCI II
< 90 días	27	10,4 (DS 8,5)	9,1 (DS 5,6)	8,7 (DS 7,9)
> 90 días	17	5,3 (DS 5,5)	4 (DS 4,7)	5,2 (DS 4,6)
P*		0,029	0,017	0,002

* Independent means comparison

Conclusions.-

- Patients older than 65 diagnosed of ISCI are able to complete safely a gait training program with LS .
- Patients older than 65 diagnosed of acute or subacute incomplete SCI that follow a gait training program with Lokomat System improve their strength in lower extremities and their ability and independence for walking.
- Probably, basal physical condition and chronic pathologies, frequently associated, are the most important determinants in the low rate found in functional scales.
- Starting treatment 3 or less months after lession is regalted with an increase of strength, gait ability and independence.

References:

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