

Favorable evolution on functional key components but with multiple remaining pathological elements in a patient diagnosed with thoraco-lumbar SCI - Case report

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Abstract

Introduction: This paper presents an extremely complex case: paraplegia with T11 neurological level after a thoraco-lumbar spinal cord injury (SCI), with T12 commutative fracture, by falling from about 2 meters (operated on 17.02.2020), currently having an AIS/ Frankel C motor deficit, with multiple complications and successive aggravation, as well as the approach of its therapeutically-rehabilitation management. **Materials and methods:** 41-year-old male patient admitted to our Clinical Division for motor deficiency of paraplegia type, immediately postoperative AIS/ Frankel C, currently AIS/ Frankel D, for superficial sensitivity disorders with T11 level was clinically and functionally evaluated, according to the implemented standard protocols of our Clinic, by the following measurement evaluation scales: AIS, FIM, QOL (Quality of life), Ashworth, Penn, FAC, WISCI II and investigated paraclinical). During hospitalization, the patient presented numerous aggravations and complications such as: urinary tract infection with E. Coli; left epididymo-orchitis, all this aggravating and delaying therapeutic procedures, respectively recovery results. **Results:** Following an optimal treatment including pharmacological and a complex neuro-rehabilitation program, the patient had a favorable evolution with increased values of the measurement scales (motor AIS with 13 points, FIM motor with 5 points, QOL with 9 points, and FAC with 1 point); incompleteness of the bladder and neurogenic bowel dysfunction (intermittent urinary catheterization); increased muscle strength with improved walking speed and balance. **Conclusion:** The rehabilitation of patients with spinal cord injury is a complex process which requires taking into account all associated pathologies that can play a decisive role in the evolution of the patient. A multidisciplinary team is required for such purposes.

Keywords: spine-cord injury, paraplegia, poly-pathologic, rehabilitation,

Introduction

A spinal cord injury — damage to any part of the spinal cord or nerves at the end of the spinal canal (cauda equina) — often causes permanent changes in strength, sensation and other body functions below the site of the injury. SCI affects a patient's physical, social, and psychological well-being and places a substantial burden on health care systems, families, communities, and unfortunately, there is no treatment. These are the serious reasons for knowing the possibilities of prevention through a national program and allocate resources appropriately for disease management (1,2).

The most common causes are: car accidents, sport accidents, diving, fall from stairs, fall from cart, bicycles accidents and falling from a tree (3). In Romania, the major cause for cervical spinal cord injury is diving in shallow water and members of our Clinic's Division started a successful media campaign with a television solo spot that encouraged the public not to dive in shallow waters.

Material and methods: The present paper presents an extremely complex case: paraplegia with T11 neurological level post-thoracic lumbar S.C.I with T12 commutative fracture by falling from about 2 meters (operated 17.12.2019), immediate postoperative Frankel C- currently AIS / Frankel D, with multiple complications and progressive worsening, as well as the approach of its therapeutically-rehabilitation

management, respectively. Objective examination upon admission revealed: good general condition; afebrile; obesity grade I; normal in teguments and mucosae; post-operative scar in the thoracolumbar region; superficial non-palpable lymph nodes; motor deficiency of paraplegia type immediate postoperative Frankel C with T11 neurological level, Morel-Lavalle lesion lumbar region; T12 commutative fracture (T12 vertebral reconstruction; bilateral T11-L1 transpedicular fixation), bilateral skeletalization T11-L1 (wider left, ablation of migrated bone fragment T12); normal vesicular breathing, without pathological bronchial sounds, SaO₂ = 97% spontaneous; normal heart sound, no added sounds or murmurs, BP=150/100mmHg, heart rate 98bpm rhythmic, the pedis pulsatile bilateral artery; abdominal fat, mobile with breathing, painlessly spontaneous and palpation, slow intestinal transit (approximate 7 days) helped with paraffine oil, liver with inferior margin at the coastal rebord, non-palpable spleen; non-palpable kidneys, Giordano negative, bladder dysfunction, urinary catheterization.

The patient was clinically and functionally assessed, according to the standardized protocols implemented in our clinic by means of the assessment grading scales: AIS (American Spinal Injury Association Impairment Scale), FIM (Functional Independence Measure), QoL (Quality of Life) (Flanagan completed by Burckhard), Asworth si

Penn, FAC (Functional Ambulation Category), WISCI II (Walking Index for Spinal Cord Injury).



Fig. 1 Improved gait speed and balance by: sustained gait with Canadian crutches about 10 m and with fixed frame over long distances with small steps by increasing the support phase and decreasing the swing phase, the events- midswing is realized through hip extern rotation bilateral, initial contact is realised bilaterally digitigrade with the angle of foot in external; go up and down a few steps with support; muscle force growth and exercise resistance; stabilization of the bilateral knee in the double support phase

NMAK examination revealed: conscious, cooperative, spatio-temporal orientation and allopsychic, without meningeal irritation, normal cranial nerves, motor deficiency of paraplegia, hypotonic, hypokinetic, with bilateral amyotrophy in the lower limbs, bilateral upper limb muscle strength: 5/5 MRC proximal, intermediate and distal ; bilateral lower limb muscle strength: 3- / 5 MRC proximal and intermediate, 0/5 MRC distal, position ankle in varus equinus bilateral (cognitive FIM 35/35, motor FIM 39/91, FAC =1/4, QQL=87/112, motor ASIA 62/100), superficial and deep sensitivity disorder with neurological level T11, ROT absent bilaterally lower limbs.

From a functional point of view the patient is mobilized in the wheelchair, with corset thoracolumbar and distal motor control absent in lower limbs with a deficit of the dorsiflexion in the lower limbs bilaterally. Practicing the gait on very short distances with the strong support of two people, wearing a thoracolumbar corset.

The patient was paraclinically examined in order to evaluate his biological reserve and his availability in bearing the recovery program. To this purpose, both laboratory and imaging investigations have been used. The laboratory investigations revealed: discret iron deficiency anemia, low glucose tolerance, moderate inflammatory biological syndrome.

Computerized tomography of the lumbar spine: fracture of the T12 vertebral body, with bone fragments displaced in the intracanal anteroposterior direction approximately 12 mm, with imprinting/ narrowing of the medullary canal at this level. Left T12 posterior arch fracture with interest in the T12 spine and minimal displacement.

During the hospital stay, the patient underwent a complex recovery program which included: treatment with

medication - anticoagulant injectable, antihypertensive, neurotrophic, antiseptic urine, antibiotic, probiotic, gastroprotective (antacid), blocking calcium channels voltage-central spasmolytic (to relax the urethral muscles and facilitate intermittent probing), hydration and hydro electrolytic rebalancing, anticholinesterase and physical treatment - electrostimulation DI=500MS; DP=4500MS; P=5000MS; $\vartheta=12$ imp/min , time=2-4 minutes, daily two sessions on the right lower limb and one session on the left lower limb also kinesiotherapy, with the following objectives : maintaining physiological alignment ; fighting vicious posture (retractions, var equin); restoring/ maintaining articular mobility at functional angles; maintaining tone, force and muscle strength; improving global voluntary motor control; reeducation in sitting, orthostatism and gait.

During admission, the patient presents chills, fever 38.00 degrees Celcius, accusing spontaneous pain at anting the left hemiscrot (teguments of the entire scrot- moderate hyperemic), reason for which uroculture and urological consultation are required - Clinic Hospital Sf Ioan, where the diagnosis of left epididymo-orchitis and ITU with E.coli sensitive to gentamicin is made, antibiotic therapy is recommended for 10 days (Levofloxacin in combination with Gentamicin) with tolerability and favourable evolution.

Results: Due to complications, the mobilization of the patient in orthostatic posture, with hand support is delayed, this can be started without restrictions after the remission of inflammation in the left hemiscrot. Having a complex neuromuscular recovery program, the patient had a favourable evolution with increasing the scale values (AIS motor - with 26 points, FIM motor - with 15 points, QQL - with 9 points, WISCI II - with 12 points and FAC - with 2 points) and with remission of complications: Epididymo-orchitis and ITU with E. Coli in a correct manner without serious repercussions on the recovery plan.

CONCLUSION: The rehabilitation of patients with spine-cord injury is a complex process, which requires taking into account all pathologies and complications associated that can play a decisive role in the evolution of the patient.

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