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Very complex and difficult rehabilitation process in a post traumatic SCI (Spinal Cord Injury) complete tetraplegic patient with intense and refractory spasticity and frequency of spasm with presacral pressure sores (successfully operated)- case report

SAGLAM Ali-Osman [1], REBEDEA Ana Carmen [1], PATRAŞCU George [1], NIRLU Luminita [1], YILDIZGOREN Mustafa Turgut [2], POPESCU Cristina [1], ONOSE Gelu [1 3]

Corresponding author: **Popescu Cristina, E-mail: cristina_popescu_recuperare@yahoo.com**

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1. Teaching Emergency Clinical Hospital "Bagdasar-Arseni", Bucharest, Romania
2. Fizikon Medical Center Physical Medicine and Rehabilitation, Konia, Turkey
3. University of Medicine and Pharmacy "Carol Davila" in Bucharest, Romania

Abstract

Introduction. Spinal cord injury (SCI) is the injury of the spinal cord from the foramen magnum to the cauda equina which occurs as a result of compulsion, incision or contusion.(1) As a result of the injury, the functions performed by the spinal cord are interrupted at the distal level of the injury. SCI causes serious disability among patients.(2) The treatment and rehabilitation period is long, expensive and exhausting in SCI. The results of SCI bring not only damage to independence and physical function, but also include many complications from the injury. Neurogenic bladder and bowel, urinary tract infections, pressure ulcers, orthostatic hypotension, fractures, deep vein thrombosis, spasticity, autonomic dysreflexia, pulmonary and cardiovascular problems, and depressive disorders are frequent complications after SCI.(3)

Material and method. Having the patient's consent and The Teaching Emergency Hospital "Bagdasar-Arseni" Ethics Committee's approval, a 48 years old patient, complete tetraplegic with intense and refractory spasticity and frequency of spasm with presacral pressure sores (successfully operated) post traumatic spinal cord injury.

The patient was functionally assessed using the following scales: : Glasgow Outcome Scale Extended, Modified Rankin Scale, Modified Ashworth, Penn Spasm Frequency Scale Functional Independence Measure, FAC International Scale, Quality of Life Assessment.

Conclusions. Spasticity is a common secondary impairment after SCI characterized by hypertonus, increased intermittent or sustained involuntary somatic reflexes (hyperreflexia), clonus and painful muscle spasms. Severe spasticity may contribute to increased functional impairment, contractures, ulcers, posture disorders and pain. Treatment should start as soon as possible to prevent such negative effects.

Keywords: *tetraplegia, spinal cord injury, spasticity, pressure sores, traumatism, rehabilitation,*

Introduction

Spinal cord injury (SCI) is the injury of the spinal cord from the foramen magnum to the cauda equina which occurs as a result of compulsion, incision or contusion.(1) As a result of the injury, the functions performed by the spinal cord are interrupted at the distal level of the injury. SCI causes serious disability among patients.(2)

The treatment and rehabilitation period is long, expensive and exhausting in SCI. The results of SCI bring not only damage to independence and physical function, but also include many complications from the injury. Neurogenic bladder and bowel, urinary tract infections, pressure ulcers, orthostatic hypotension, fractures, deep vein thrombosis, spasticity, autonomic dysreflexia, pulmonary and cardiovascular problems, and depressive disorders are frequent complications after SCI.(3)

Materials and Methods. CASE REPORT

The current case reports a 48-year-old male patients with a longline asthenic constitution and no previous medical history, who accidentally fell off a bicycle resulting C5-C6 and C6-C7 medullary contusion, C4 apophysis fracture with displacement (avulsion) and C5-C6 without displacement complete AIS/Frankel-A tetraplegia with C5 neurologic level.

The reasons for admission on Neuromuscular Rehabilitation Section: Tetraplegic severe motor deficit, severe locomotor and self-grooming dysfunction, neurogenic bladder (urine retention), sensibility disorders and specialized therapeutic treatment.

Neuro-myo-arthro-kinetic clinical examination at admission: Conscious, cooperant, temporo-spatial orientated. No signs of meningeal irritation. Cranial nerves examination: normal. Upper limbs C5= 4 C6=+3 C7= 3 C8=-2 T1= 0 Sensitivity disorders starting at C5 level. Neurogenic bladder and intestine (retention). OTR-globally abolished. Babinsky (-)

Scale examination at admission; Glasgow Outcome Scale Extended=3/8, Modified Rankin Scale=5, Modified Ashworth=0/4(spinal shock), Penn Spasm Frequency Scale=0/4(spinal shock), Functional Independence Measure= score cognitive 35/35 and score motor 14/91, FAC International Scale=0/5, Quality of Life Assessment=56/112.

Paraclinical examination revealed relatively moderate hypoalbuminemia, hypoproteinemia, hypomagnesemia. Macrocytic hyperchromic anemia and moderate-marked biological inflammatory syndrome.

Magnetic Resonance Imaging of the Cervical Spine (Native): Cervical Hyperlordosis. The vertebrae are aligned with the posterior line. Discal deboards median C4-C5, circumferential C5-C6 and paramedian right C6-C7. Intramedullary lesion with sequelae appearance near the vertebral body C6.

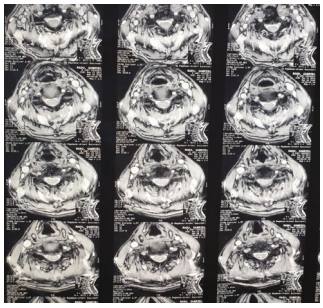

Figure 1: Cervical MRI-axial
Figure 2: Cervical MRI-sagittal

Pharmacological treatment is performed with: an injectable anticoagulant type LMWH, neurotrophic, antibiotic, gastric protector (antacid), antispastic, urinary antiseptic and hydroelectrolytic supplements.

While the patient did not show spasticity at the admission, the severity of spasticity and frequency of spasm in lower extremity increased after spinal shock period.

Medication started with 10 mg baclofen daily and increased to 75 mg per day. There was no decrease in his spasticity. Modified Ashworth 4/4 Penn scale 3/4.

In order to facilitate daily life activities and care, 300 U botox was injected in the lower and upper extremities. There was no reduction in spasticity as expected.

He was admitted to the neurosurgery service to check the applicability of a baclofen pump.

The preliminary test was unfavorable, he didn't respond even to the administration of the intramedullary baclofen. The baclofen pump couldnt to be considered appropriate and he remained with the spasticity, controlled by oral baclofen and by injections of botulinum toxin periodically.

After 6 months of complete tetraplegia emergence slightly and inconsistent aspects of partial motor preservation, this continued to be more consistent. (Right L5-S1=-2, Left L5=-2) The patient had no sensory or motor function in S4-5.

The patient, who came to our clinic with a 2nd degree sacral pressure ulcer, was discharged with a 2nd degree pressure ulcer, slightly improving under conservative treatment.

Our patient, who is a social case, applied to our clinic for a second admission with a 4th degree sacral pressure sores because the necessary care could not be provided during his home stay. (figure 3)

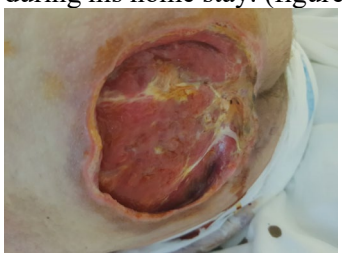

Figure 3: 4th degree sacral pressure ulcer

The patient was admitted at Plastic and Reconstructive Surgery and reconstructed with gluteal advancement flaps in V-Y (figure 4)

Figure 4: Postoperative pressure ulcer

Postoperative pressure ulcer complications, recurrence rates, and mortality rates in the published literature are largely retrospective or case series data.(4) The reported data from these studies or weighted systematic review show recurrence of pressure ulcers following reconstruction varying widely from 2.9–33.3%, and overall complication rates ranging 6.6–53%(4)

Figure 5: Postoperative complication
Figure 6: After the revision of the pressure sores

After performing plastic surgery revision operation , the patient did not show any other complications related to pressure sores, being eventually cured as regards this complication (figure 6)

Particularities of the case

Very intense spasticity that does not respond to oral and injectable (intra-rahidian Baclofen injection tenting-in order to install a Baclofen pump- with inconclusive result) treatment.Complications developed and their treatment process were challenging. Preserved partial motor zone emergence after 6 months rehabilitation program.

Conclusions

Spasticity is a common secondary impairment after SCI characterized by hypertonus, increased intermittent or sustained involuntary somatic reflexes (hyperreflexia), clonus and painful muscle spasms. Severe spasticity may contribute to increased functional impairment, contractures, ulcers, posture disorders and pain. Treatment should start as soon as possible to prevent such negative effects. Every complication that develops negatively affects the rehabilitation process. Proper monitoring and management of these kinds of complications in the context of neuromuscular rehabilitation are necessary for the enhancement of the quality of life.

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