IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 21, Issue 11 Ser.4 (November. 2022), PP 20-23
www.iosrjournals.org

Post Operative Rehabilitation in Cervical Discectomy : A Single Case Report.

Sathya Siva[1],
[1](Physiotherapy,Saveetha University, India)

Abstract:
Cervical myelopathy is a form of neurological condition under which the spinal cord is compressed in the cervical spine.A 50 year old person complaint of bilateral weakness in both upper limb and lower limb after a post operative cervical micro discectomy with anterior fusion .neurological rehabilitation program was started with support of neurologist, physiotherapy, occupational therapy and psychology.Physiotherapists desire to enhance the muscle strength,reduce spasticity,to reduce pain,improve range of motion , provide whole body and mind relaxation and in other hand occupational therapist aimed atimproving the functional outcome in fingers of hand's and toes of foot.while the psychology helpful in assessing the psychological impact of the patient illness and neurologist helpful in providing a medication for reducing the spasticity and pain.The patient was scheduled accordingly and started for the rehabilitation program.The objective of the study is to investigate the effectiveness of rehabilitation program in the post operative cervical discectomy with anterior fusion .A single-case study done in saveetha rehabilitation center thandalam.In the case of post-operative cervical myelopathy, a rehabilitation programme is a better option. The patient with severe cervical myelopathy, does not have a good prognosis. For a better patient outcome, more research is needed to done with understand the mechanical pathophysiology and biomolecular alterations.

Key Word*: Cervicaldiscectomy ,Rehabilitation program,Physiotherapy.*

Date of Submission: 01-11-2022 Date of Acceptance: 12-11-2022

I. Introduction

The spinal cord is compressed in the cervical spine as a result of the cervical disc protruding, causing gradual deterioration and a decline in quality of life. This condition is known as cervical myelopathy. severity of the cervical myelopathy is determined by the location and intensity of the spinal cord compression.cervical spine is the most important site for communicating motor and sensory input and output signals from the brain to the periphery limbs; any disruption in this area will result in quadriplegia or quadriparises.Cervical myelopathy can arise from degenerative illness, congenital stenosis, trauma, or disc herniation[11-17].Early signs of this condition include fine motor skill problems and "painful hands, clumsy, numb.".Other clinical symptoms include neck discomfort and stiffness (decreased range of motion, especially with extension movement), pain across the shoulder complex region, paresthaesia in bilateral or unilateral hands, and may present with radiculopathy and weakening of the distal limbs.The neurological signs involves exaggerated tendon reflexes and presence of babinski and hoffman's sign indicating upper motor neuron lesion type , in some severe case clonus might be presented and loss of sensory input in bladder-bowel disturbance.The patient's physical examination & signs and symptoms can reveal 75% of the diagnosis.[6-10]Based on the patient's current complaint and the severity of the injury site, several treatments and management strategies are being used.However, the condition's prognosis is late and poor.

II. Case Report

History :50 year old person complaint of weakness of both the upper limb and lower limb after RTA(road traffic accident). with surgical history of post operative C5 -C6 anterior cervical discectomy with fusion and urinary catheterized 3 months back.

On examination : The examination begins with a motor evaluation; according to modified ashworth scale the muscle tone was assessed using passive movement.Following a test of the muscle tone, the lower extremities were discovered to exhibit spasticity with grade 3 in bilateral knee complex and a bilateral ankle complex with grade 4, which was known to be rigidity. tone in the shoulder and elbow complex was found to be normal, and the joints of the finger and thumb are tightly flexed and associated with left limb hip flexion weakness .Box and Block test is used to evaluate the unilateral gross manual dexterity but patient cant able accomplish the full task.the sensory integration was evaluated and found to be normal.According to patient complaints, spasticity

worsened in the sitting position and decreased in the lying position. When the patient tries to walk, the gluteal region crosses to each other, causing pain.Furthermore, the pain was evaluated using the Numerical Pain Rating Scale, which revealed a moderate level of pain discomfort.when the neurology physiotherapist assess the lower limb movement of hip abduction of the normal side , the associated movement was produced in opposite limb in same direction . from this physiotherapist noticed the concept associated reactions of "Raimiste's abduction phenomenon".And also assessed for the pathological reflex's showed positive Babinsk and Hoffmann's test sign which was a confirmatory sign of upper motor neuron lesion .In order to measure the activity of daily living the barthel index was used to evaluate the functions and it was found to be "very dependent" level . ambulatory status was analyzed with the gait pattern,patient uses walker for amubulation it was revealed that there is variation in gait pattern which was found to be a circumduction of the hip and since the patient has rigidity in ankle complex,patient cannot able to clear the foot from the floor.according to the Nurick Classification based upon the ambulation and gait it was found to be grade -4 .According to the ASIA scale, the level of spinal cord injury was revealed to be in the class -D.on other hand the psychologist was helpful in assessing the psychology factor of the patient using appropriate scale and questions . which was found that the patient has stress and depression of his disabilty.Although the spinal cord compression was surgically relieved , but there is no good prognosis in patient symptoms and disability.

Clinical Finding : From the radiology investigation of MRI it was diagnosed that C5 - C6 prolapsed intervertebral disc(PIVD) with cervical myelopathy .

Figure-1 : MRI showing C5 -C6 prolapsed intervertebral disc (PIVD) with cervical myelopathy .

Surgical procedure : An anterior approach is performed using anterior cervical discectomy and fusion (ACDF) involving up to three levels of discs.

Pre Operative course : Before the plan of surgery the patient experience severe pain in the cervical region and not able to perform any movement in upper limb, lower limb and trunk movement due to spasticity .and involuntary control in the bowel and bladder control and mild discomfort in breathing .

Post Operative course : After the post operative period the patient has good prognosis in reduction of pain , limb movements, and mild improvement in bowel and bladder control. Patient was catheterized and on medication for spasticity. But till the spasticity level has not reduced.

Rehabilitation : Rehabilitation program has started with the relaxed passive movement and deep breathing exercise and suctioning procedure was done to clear the lung secretionand good positioning of body is maintained .

In phase-II : Initiated with active assisted movement to active movements for all the upper and lower limbs .

In phase - III: along with phase -II , heel sliding and ankle toe movement,peg board exercise is added. But ankle toe movement cannot performed by the patient due to rigidity. To overcome the rigidity sustained muscle stretching is performed.

In phase -IV : patient is planned for out of bed activities , when the patient is made to stand the patient cannot able to stand due to instability of the knee joint in both bilaterally. Due to this problem the patient is planned for the static quadriceps exercise and tilting table .

In phase-V : patient is instructed to perform a static quadriceps exercise with 10 sec Hold x10 REP x10SETS after that patient is shifted to the tilting table with pre-vitals assessed, to begin with the patient is tilted till the 30^0 range after that the patient complaint of dizziness. Further the vital sign is rechecked up and found to be normal. The range is maintained for 5 minutes after that symptom of dizziness is subset. Few minutes later

tilting range is increased to 60^0 with no complaint , maintaining the position for 10 minutes , after that tilting range is improved to 90^0 with no complaints . followed phase -III,IV and V for 3 weeks .

In phase -VI : sustained muscle stretching for all the lower limb is done to reduce the spasticity and resistance program was started with theraband exercise , weight cuff exercise . from the previous phase of rehabilitation the knee stability is improved .

In phase - VII : patient is made to stand for 5 min and assessed for knee stability which was found to be good prognosis in knee functioning.and ambulation is initiated with using walker . at the time of ambulation the patient can achieve a good forward propulsion of body . but the spasticity in hip adductors causes difficulty "crossing over the gluteal region" which further increases the pain restricting ambulation .

In phase -VIII : Initiated with the weight bearing exercise and stretching,and mat activities are performed .stimulation is given in order to subset the pain during the exercise period.

In phase - IX : patient has psychological impact due to prolong period of treatment but the spasticity level have not yet reduced .jacobson relaxation technique is implemented for mindful relaxation.

In phase - X : According to the patient complaint spasticity is less in lying position and increases in sitting and standing position from this it diagnosed that cervical muscles and trunk muscles remains weak . cervical isometrics exercise and trunk stabilization exercise is implemented for 1 week after that the level of spasticity remains the same with no good prognosis[18] .

III. Discussion

The holistic approach of a neurologist, neurosurgeon, physiotherapist,occupation therapist and psychiatrist is required for appropriate diagnosis and management of cervical myelopathy.The recovery period incorporates the timeline of medical intervention based on the symptoms and severity of spinal canal stenosis.The mission of a neurologist and a neurosurgeon is to assess for subsequent complications and the need for medication modifications. Physiotherapists and occupational therapist can treat with pain relief, spasticity reduction, and improving activities of daily living (ADL) function.psychiatrist, on the other hand, can help patient recover from mental illnesses.physiotherapist has a huge responsibility of treating a patient with cervical myelopathy according to neurological symptoms and disabilities .There is no exact rehabilitation protocol for cervical myelopathy patient ,planning and fixing a correct rehabilitation procedure to influence the recovery period.When checking for suspected cervical myelopathy, hand dexterity tests are also recommended. It is possible to do the grip and release test. In 15 seconds, a regular patient should be able to hold and release their hand 25-30 times. Patients who struggle with this test may also experience loss of motor strength, sensory abnormalities, intrinsic muscle wastage, and stiffness, which is referred to as "myelopathy hand."[1].According to Cook.et.al[2] The combination of clinical findings (1) gait deviation; (2) +Hoffmann's test; (3) inverted supinator sign; (4) +Babinski test; and (5) age >45 years was found to be effective in ruling out and ruling in cervical spine myelopathy in a study.The condition's post-test probability could be adjusted to 94–99 percent using a combination of three of five or four of five tests.Kadanka .et .al.[3] discovered no difference in long-term results (2 years after intervention) between patients who had conservative or surgical treatment. There were no changes between the surgery and conservative groups after ten years[4].Darryl.C.et.al[5]The pathophysiology of cervical myelopathy comprises a complicated sequence of biomolecular alterations, including ischemia, excitotoxicity, and apoptosis, triggered by a combination of mechanically produced static and dynamic variables. To understand the causes driving cervical myelopathy's gradual cell death, more research is needed. With a better understanding of the pathophysiological mechanisms behind cervical myelopathy, more reparative and regenerative methods to relieve spinal cord and nerve root compression can be developed.

IV. Conclusion

In the case of post-operative cervical myelopathy, a rehabilitation programme is a better option. The patient with severe cervical myelopathy does not have a good prognosis. For a better patient outcome, more research is needed to done with understand the mechanical pathophysiology and biomolecular alterations.

Ethics committee:Ethics committee approval is not necessary because the study is a case report.

Consent:Patient's informed consent was sought before the information was published.

Funding:Nil

Disclosure:no conflicts of interest.

References

[1]. Ferriter PJ, Mandel ST, Degregoris GE, Kamara E, AYDIN SM. Cervical myelopathy. Practical Neurology. 2014 Apr:43-6.

[2]. Cook C, Brown C, Isaacs R, Roman M, Davis S, Richardson W. Clustered clinical findings for diagnosis of cervical spine myelopathy. Journal of Manual & Manipulative Therapy. 2010 Dec 1;18(4):175-80.

[3]. Kadaňka Z, Bednařík J, Voháňka S, Vlach O, Stejskal L, Chaloupka R, Filipovičová D, Šurelová D, Adamová B, Novotný O, Němec M. Conservative treatment versus surgery in spondylotic cervical myelopathy: a prospective randomised study. European Spine Journal. 2000 Dec;9(6):538-44.

[4]. Kadaňka Z, Bednařík J, Novotný O, Urbánek I, Dušek L. Cervical spondylotic myelopathy: conservative versus surgical treatment after 10 years. European Spine Journal. 2011 Sep;20(9):1533-8.
[5]. Baptiste DC, Fehlings MG. Pathophysiology of cervical myelopathy. The Spine Journal. 2006 Nov 1;6(6):S190-7.
[6]. Edwards II CC, Riew KD, Anderson PA, Hilibrand AS, Vaccaro AF. Cervical myelopathy: current diagnostic and treatment strategies. The Spine Journal. 2003 Jan 1;3(1):68-81.
[7]. Nouri A, Tetreault L, Singh A, Karadimas SK, Fehlings MG. Degenerative cervical myelopathy: epidemiology, genetics, and pathogenesis. Spine. 2015 Jun 15;40(12):E675-93.
[8]. Rhee JM, Shamji MF, Erwin WM, Bransford RJ, Yoon ST, Smith JS, Kim HJ, Ely CG, Dettori JR, Patel AA, Kalsi-Ryan S. Nonoperative management of cervical myelopathy: a systematic review. Spine. 2013 Oct 15;38(22S):S55-67.
[9]. Smarick SD, Rylander H, Burkitt JM, Scott NE, Woelz JS, Jandrey KE, Aldrich J, Sturges BK. Treatment of traumatic cervical myelopathy with surgery, prolonged positive-pressure ventilation, and physical therapy in a dog. Journal of the American Veterinary Medical Association. 2007 Feb 1;230(3):370-4.
[10]. Badran A, Davies BM, Bailey HM, Kalsi-Ryan S, Kotter MR. Is there a role for postoperative physiotherapy in degenerative cervical myelopathy? A systematic review. Clinical Rehabilitation. 2018 Sep;32(9):1169-74.
[11]. Chikuda H, Seichi A, Takeshita K, Shoda N, Ono T, Matsudaira K, Kawaguchi H, Nakamura K. Correlation between pyramidal signs and the severity of cervical myelopathy. European Spine Journal. 2010 Oct;19(10):1684-9.
[12]. Fountas KN, Kapsalaki EZ, Nikolakakos LG, Smisson HF, Johnston KW, Grigorian AA, Lee GP, Robinson Jr JS. Anterior cervical discectomy and fusion associated complications. Spine. 2007 Oct 1;32(21):2310-7.
[13]. Romano PS, Campa DR, Rainwater JA. Elective cervical discectomy in California: postoperative in-hospital complications and their risk factors. Spine. 1997 Nov 15;22(22):2677-92.
[14]. De Biase G, Chen S, Bydon M, Elder BD, McClendon J, Deen HG, Nottmeier E, Abode-Iyamah K. Postoperative restrictions after anterior cervical discectomy and fusion. Cureus. 2020 Aug 3;12(8).
[15]. Sang UH, Wilson CB. Postoperative epidural hematoma as a complication of anterior cervical discectomy: report of three cases. Journal of Neurosurgery. 1978 Aug 1;49(2):288-91.
[16]. Almeida GP, Carneiro KK, Marques AP. Manual therapy and therapeutic exercise in patient with symptomatic cervical spondylotic myelopathy: A case report. Journal of Bodywork and Movement Therapies. 2013 Oct 1;17(4):504-9.
[17]. Kumar NS, Niyatee L, Dharmarajan R. Effect of exercise program on the rehabilitation of patients with cervical spondylotic myelopathy. Neuroscience & Medicine. 2012 Mar 2;2012.
[18]. Park SE, Lim WT, Moon SH. The effects of a neck exercise using a PNF neck pattern on the balance and numbness of both the upper extremities and neck motions in patients with cervical myelopathy-single subject design. PNF and Movement. 2018;16(3):333-43

Sathya Siva. "Post Operative Rehabilitation in Cervical Discectomy : A Single Case Report." *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, 21(11), 2022, pp. 20-23.