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Comprehensive Rehabilitation Approach for Managemenof Paraplegia Due to Pott's Spine- A Case Report

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Abstract

Pott's Spine is a degenerative condition of spine leading to destruction of intervertebral disc and vertebral body. Management of pott's spine is multidisciplinary including orthopaedic surgeon, general physician, physiotherapist and many more. Paraplegia is a common complication of pott's spine which requires special attention.

In this case the patient presented with loss of sensation and movement in lower limb. Physiothersapy rehabilitation program was planned based on the clinical presentation of the patient. Sensory integration, Roods protocol, Electrical stimulation were the key aspects of management. 8 weeks of rehabilitation protocol was given and effect of physiotherapy was seen in the case. Post 8 weeks significant improvement was seen in muscle tone and range of motion was imitated by the patient. Thus, physiotherapy has a significant role in improving the muscle tone and quality of life of the patient suffering from paraplegia.

Keywords: - Rehabilitation, Case Report, Pott's spine, tuberculosis.

Introduction

Tuberculosis is an infectious condition caused by the manifestation of Mycobacterium Tuberculosis which is transferred through air[1]. Tb is one of the top 10 causes of mortality globally with incidence of 210 cases per 1 lakh population in India, India is on 36th position in term of incidence.[2]Only 10 percent individuals infected by mycobacterium get active TB, others become career.[3] Tb being a communicable disease always draws special attention in terms of management and restricting the disease.

Potts Spine is the spinal infection of tuberculosis. 1 percent of Tb cases leads to spinal tuberculosis due to manifestation of the infection in spine[3]. The spread occurs through the blood vessels. Thoracic region is the most common area of infection, leading to the collapse of intervertebral disc and the vertebral body. Paraplegia is a complication of Potts spine, which can be divided as active onset or late onset paraplegia.[4] Management of paraplegia involve use of steroids, splinting and physical therapy

Physiotherapy in case of paraplegia focus on improving the quality of life of the patient. Various treatment approaches are used in management based on the clinical presentation of the patient.[5] Physiotherapy helps in preventing the muscle atrophy and further deteriorating the patient's condition. Electric stimulation is a method used to stimulate the nerve and muscles in order to maintain their functions. Depending on the type faradic or galvanic current is determined and delivered to the patient. In this case report we discuss the role of physiotherapy in management of paraplegia post laminectomy in a patient with potts spine.

Case Presentation

A 66 year old male retired gardener with right hand dominance was referred to physiotherapy department post laminectomy and debridement with the complaints of pain in back region ,inability to control urine and stools and inability to move his lower limbs. Patient gives a history of pain in upper back region 5 months ago .One month later the patient visited hospital and investigations like X-Ray, MRI were performed .He was diagnosed with Potts Spine. He was put on DOTS regime and got operated for the same (debridement and laminectomy done at the level of D4-D5 D5-D6 D6-D7)

Figure 1- X-Ray of Thoracic Spine

Figure 2- MRI of Thoracic Spine

On posture assessment kyphosis and barrel chest was seen
On assessment hypoesthesia and hypoalgesia below the T12 level of dermatomes

Motor Examination-

Hypotonia was present in B/L lower limbs

Range of motion: - No active range is present in bilateral lower limb

Babinski- Absent

Deep:	Rt	Lt
Biceps	++	++
Triceps	++	++
Knee	0	0
Ankle	0	0

Physiotherapy Management

Phase 1(1-8 weeks)

Goals

Patient Education, avoid Secondary Complications, normalize the tone, decrease the work of Breathing, Sensory Integration, Proximal muscle strengthening, Bowel and Bladder Retraining

Patient Education- Educate the patient about this condition, precautions to be taken, importance of respiratory hygiene and the role of physiotherapy in his condition and the importance of physiotherapy. To avoid pressure sores: - Two hourly positioning, airbed was given, Deep Vein Thrombosis (DVT) pumps were given and passive ankle toe movement every 2 hours was advised to the care taker. Positioning was given to avoid contractures and hip knee ankle foot orthosis was given to prevent foot drop. Roods protocol was used to normalise the tone methods like quick icing, fast brushing, quick stretching were given. Fast icing for 8 minutes from proximal to distal direction was given once a day. Quick stretching was given for dorsiflexors, hamstring and adductor was given. Heavy joint compression was given for ankle, knee and hip joint. Faradic stimulation was given for peroneal nerve 3 sets of 30 repetition. To reduce the work of breathing segmental breathing technique was taught. Pursed lip breathing is given to increase expiration. Different textures are used we progress from soft to rough gentle strokes 3-4 are given per dermatome to improve sensory feedback. Proximal muscle strengthening with 1kg weight was given.

Phase 2

Goals- Maintain the goals achieved in phase 1, improve the tone of muscles, maintain the muscle integrity. Teach the activities of daily living. Standing and ambulation

To improve the tone of muscles, roods protocol of fast icing, quick stretching and heavy joint compression was continued. To maintain the muscle integrity, galvanic stimulation was given to quadriceps muscles 3 contractions 3 sets. Wheelchair ambulation was given to maintain psychosocial wellbeing. Hip knee ankle orthosis was prescribed. Assisted sit to stand was given 10 repetition 3 times a day. Passive range of motion exercises were given to the patient in order to maintain the available range of motion and give the patient kinaesthetic feedback. Range of motion exercises were performed 4 times a day for 10 repetition.

Timeline	Goal	Intervention	Dosage
0-2 weeks	• Patient education • Secondary Complication • Decrease the work of breathing	• Explain the patient Dos and Don't • Airbed, two hourly positioning • Segmental Breathing	• 7 repetition 3 times a day
3-4 weeks	• Sensory integration • Normalize the muscle tone	• Different Textures in every dermatome • Roods approach- fast icing, heavy joint compression • Passive Range of Motion	• 3 repetition in each dermatome from soft to hard • 8 minutes icing • Joint compression 1 repetiton • 10 repetation 4 times a day
5-8 weeks	• Maintain the muscle integrity • Standing	• Galvanic stimulation for quadriceps • Sit to stand exercises were given	• 3 sets with 30 contractions in each set • 10 repetation, 3 sets

Discussion

In this case report we present a case of 66 year old male with paraplegia due to tuberculosis of spine. The patient presented with hypoestesia and hypotonia. The patient was operated for the TB spine with debridement and laminectomy. Post-surgery the physiotherapy intervention was given. The primary goal of physiotherapy was to make the patient independent for which normalizing the tone and maintaining the muscle strength was of great importance, rehabilitation protocol was planned considering this. 8 weeks of in hospital protocol was given and patient was further referred for physiotherapy in out patients physiotherapy department.

In 2016 a study was conducted to check the effect of human embryonic stem cell transplant and physiotherapy in subjects with spinal cord injury. They concluded that human embryonic stem cell along with physiotherapy has better results in terms of pain and improving gross motor and fine motor functions.[6]Another study was conducted in 2022 in which spinal cord injury post road traffic accident was seen. Physiotherapy rehabilitation protocol was given to the patient and significant improvement was seen in muscle strength ans ASIA score.[7]

Conclusion

Pott's Spine is a destructive version of tuberculosis spine, both the vertebrae and intervertebral discs are affected in such cases. Management of Pott's spine is a multidisciplinary approach. Physiotherapy plays and important role in maintaining the available functions and improving the quality of life of the patient.

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