DOI: https://doi.org/10.53350/pjmhs221621191

ORIGINAL ARTICLE

Frequency of Neuropathic Pain and its Effects on Rehabilitation Outcomes, Balance Function and Quality of Life among People with Traumatic Spinal Cord Injury

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ABSTRACT

Introduction: Spinal cord injury (SCI) is the damage of the spinal cord from the foramen magnum to the cauda equina which happens because of coercion, incision or contusion.

Objectives: The study's main objective is to find out how often people who have a severe spinal cord injury have neuropathic pain and how it affects their rehabilitation, balance, and quality of life.

Material and methods: This descriptive study was conducted in Sheikh Zayed medical college, Rahim Yar Khan during 2020 to 2021. Most of the patients had started a SCI programme early on, including neurosurgeon and orthopaedic consults and therapy. The data were collected during the initial visit of the patients.

Results: The data was collected from 162 patients. At-level pain was reported by 34% of those with neuropathic pain, whereas below-level pain was reported by 66% of those with neuropathic pain. In certain cases, neuropathic pain was characterised as both at and below a certain degree.

Conclusion: It is concluded that Patients with traumatic SCI often experience a condition known as europathic pain. Patients' rehabilitation outcomes, balancing function, and general well-being may be impacted, as well as their general well-being.

Keywords: SCI, Pain, Patients, Health

INTRODUCTION

Spinal cord injury (SCI) is the damage of the spinal cord from the foramen magnum to the cauda equina which happens as a consequence of coercion, incision or contusion. The functions of the spinal cord at the distal level of the damage have been disrupted because of the injury. Patients with SCI are left permanently disabled [1]. SCI affects around 40 million individuals globally each year. Young males, mainly between the ages of 20 and 35, make up the majority of this demographic, while 1% of them are minors [2]. The most prevalent cause of injury in youngsters is a collision with a motor vehicle. After starting school and engaging in organised activities, sports-related injuries are the leading cause of spinal injuries in youngsters. Football is the most dangerous sport in terms of injury rates [3]. The cervical area accounts for up to 80% of all spinal injuries in children. The thoracic and lumbar regions account for the remaining 20-40% of the total. Boys are more prone than girls to suffer from spinal injuries [4]. Car accidents, gunshot wounds, knife wounds, falls, and sports injuries are the leading causes of SCI globally. Scuba diving is the most popular sport injury. These movements cause most injuries. The methods in question cause "primary harm." Secondary damage generated by the body's response to initial injury includes bleeding, inflammation, and chemical production. Haemorrhage, inflammation, and the production of a variety of chemicals are among the first reactions of the body to injury [5]. It is common for the symptoms of neuropathic pain to last for an extended period of time. Pharmacological and electrotherapeutic techniques are typically ineffective in the treatment of neuropathic pain. Chronic neuropathic pain has been shown to worsen the quality of life for people with traumatic spinal cord injury (SCI) [6]. Many people develop health concerns as the intensity and frequency of their neuropathic pain sensations increases. This results in decreased physical function for those affected. As a result, the efficiency of rehabilitation programs is reduced in SCI patients who are dealing with psychological issues [7]. Physical and occupational therapy were not adhered to by these patients, and they spent more time in rehabilitation facilities as a result. Treatment for SCI patients who suffer from neuropathic pain is more expensive than for SCI patients without neuropathic pain, for all the above reasons [8].

Objectives: The study's main objective is to find out how often people who have a severe spinal cord injury have neuropathic pain and how it affects their rehabilitation, balance, and quality of life.

MATERIAL AND METHODS

This descriptive study was conducted in Sheikh Zayed medical college, Rahim Yar Khan during 2020 to 2021. Most patients started a SCI programme right after, which included neurosurgery and orthopaedic exams and therapy in certain cases. The data was collected during the first visit. An SCI patient's WHO-QOL BREF score was used to collect data. There were five parts to the survey, each of which contained a single question. It was in Section "A" that demographic data was discussed. During treatment, patients were asked to report the precise location and extent of their pain, as well as how long it had lasted. Sensory anomalies were mapped with the use of cotton swab and needle, hot and warm things, joint movements, and the probing of soft tissue in select cases based on severity. For the most part, the conclusions reached by teams of experts with diverse backgrounds in pain management agreed with one another. Diagnosis of neuropathic pain was based on the existence of pain unrelated to movement or inflammation, as well as sensory anomalies to pin prick and touch in a painful location matching the SCI. A variety of stimuli, such as touch or cold, might set off the pain that is being described. Continuous or intermittent with paroxysmal components are also possibilities. A range of zero to 29 was used as a reference point for calculating the risk factor related with age. Statistical significance was defined as an odds ratio with a P value less than 0.05.

RESULTS

The data was collected from 162 patients. In the neuropathic pain group, 34% stated the most common form of pain was at-level, while 66% reported the most common type of pain was below-level. Neuropathy was described as either at or below the amount of discomfort experienced by patients who experienced it on a regular basis.

Patients with full damage (ASIA A) and those with incomplete injury (ASIA B–D) experienced neuropathic pain in 42% and 39%, respectively (Table 1). Only 9% and 33% of those with complete injury reported experiencing at-level and below-level discomfort, respectively, according to the statistical analysis (2=0.229, df 1).At-level pain was reported by 15% of individuals with partial injuries, and below-level discomfort by 24%.

Table 1: At-level pain in various age groups as a function of gender, ASIA, and injury degree.

	Odds ratio	95% CI	Pr>χ^2	χ^2, degree of freedom, critical value
At-level or below-level neuropathic pain (n=162)				
Male/female				1.611, df 1, cv 3.851
Tetraplegia/paraplegia				0.062, df 1, cv 3.851
Complete/incomplete injury				0.229, df 1, cv 3.851
Age classes (all 5)				12.376*, df 4, cv 9.488
Age 30–49	1.978*	1.272–3.075	0.002	
Age 50+	3.344*	1.753–6.378	0.006	
At-level pain (n=52)				
Male/female				0.079, df 1, cv 3.851
Tetraplegia/paraplegia				1.733, df 1, cv 3.851
Complete injury				2.403, df 1, cv 3.851
Age classes (all 5)				9.988*, df 4, cv 9.488
Age 30–49	1.884	0.986–3.601	0.055	
Age 50+	2.592*	1.125–5.973	0.025	

Table 02: Statistical analysis of below level pain

Below-level pain (n=110)				
Male/female				0.594, df 1, cv 3.851
Tetraplegia/paraplegia				0.211, df 1, cv 3.851
Complete injury	2.109*	1.297–3.430	0.003	3.161, df 1, cv 3.851
Age classes (all 5)				9.649*, df 4, cv 9.488
Age 30–49	1.930*	1.163–3.201	0.010	
Age 50+	3.251*	1.596–6.622	0.001	

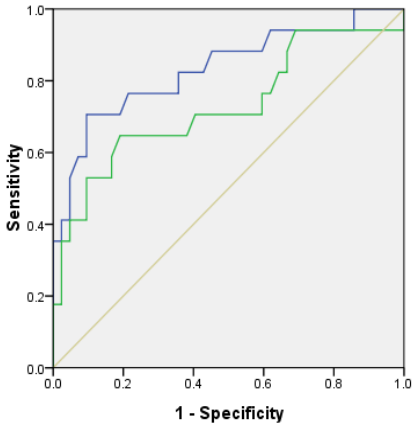

Figure 1: The ROC curves generated from the current study's findings are nearly diagonal, indicating that models with estimated log (odds) components are poor predictors

DISCUSSION

Patients with total paraplegia need to have their upper extremities strengthened to their maximum potential during the acute phase of therapy. Shoulder rotation energising workouts are advised for crutches, swimming, electric bicycles, and walking [9]. When a patient's acute phase is over, strong upper limbs are required for independent transition from bed to chair [10]. To do this, the earliest feasible time should be used to begin dynamic and resistance training for the upper extremity muscles. Dumbbells can be used to do weight and resistance workouts in bed, depending on the strength of the patient's muscles [11]. The use of electrical stimulation may be a viable option if excessive exhaustion sets in when working out the muscles Elastic bandage-aided shoulder workouts have been shown to alleviate discomfort in the shoulder [12].

To avoid developing a decubitus ulcer, the patient's position should be adjusted every two to three hours. Less common locations for decubitus ulcers include the sacrum, ischium, trochanter, and heel. Prolonged lying on one's side or in a wheelchair might induce hip flexion contractures. [13]. Flexor muscle tension can be lessened by performing ROM movements in both directions while lying on your back in a prone posture on a regular basis. Preventing contractures of the foot and ensuring adequate placement of the foot while in the wheelchair can be achieved by performing ankle ROM exercises [14]. A patient's position should be adjusted and they should be invited to engage more actively. The skin should be kept clean and decubitus ulcers avoided, as well, as part of the care plan [15].

CONCLUSION

It is concluded that Patients with traumatic SCI often experience a condition known as europathic pain. Patients' rehabilitation outcomes, balancing function, and general well-being may be impacted, as well as their general well-being. It is vital that neuropathic pain be controlled and identified appropriately if the patient is to have a better quality of life.

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