



Comments on “Gunshot injury to spine: An institutional experience of management and complications from a developing country”-----The need for an interdisciplinary spinal cord injury rehabilitation for improving outcomes in patients with gunshot injury to spine

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Dear Editor:

We have read the paper “**Gunshot injury to spine: an institutional experience of management and complications from a developing country**” by Sajid et al.¹ with interest. They have described the mechanism of injury, presentation, complications and outcomes of gunshot wound-related spinal cord injury (SCI) in Pakistan: a low middle-income country (LMIC). We would like to further expand the discussion by highlighting the importance of integrating interdisciplinary SCI rehabilitation in these patients in order to enhance recovery, reduce complications, improve functional outcomes and facilitate community re-integration.

The World Health Organization defines rehabilitation as “a set of interventions needed when a person is experiencing or is likely to experience limitations in everyday functioning due to ageing or a health condition, including chronic diseases or disorders, injuries or traumas”.² An interdisciplinary SCI rehabilitation team consists of multiple rehabilitation professionals, each playing a specific role. These include rehabilitation medicine physician (physiatrist), physiotherapist, occupational therapist, speech and language pathologist, social worker, psychologist, rehabilitation nurse and dietician work.³

It is reported that early SCI rehabilitation decreases the incidence of complications, improves functional outcome and leads to

early community reintegration of the disabled with spinal cord injury.⁴ Acute rehabilitation begins in the intensive care unit with a focus to prevent complications such as pressure ulcer, contractures and spasticity. It continues as subacute and step-down facility for a long term follow-up. Sajid et al.¹ reported pressure ulcers in 30% of their patients. This is a high incidence rate. The lack of knowledge about pressure ulcer and its prevention among patients and health workers along with a delay in identifying the early signs of skin break have been identified as a reason for high incidence of pressure ulcers in SCI patients in Pakistan.⁵ Pressure ulcers in SCI can be prevented by proper positioning, frequent change in posture, regular skin check, employing pressure ulcer prevention strategies and early mobilization.^{1,6}

Urosepsis was reported in 17.5% of patients, which can be prevented by early management of the neurogenic bladder by different means. Depending upon the level and severity of injury, the options may include clean intermittent catheterization, creeds maneuver and follow-up by urodynamic studies in these patients.^{1,7} There is a need for early mobilization and integration of multidisciplinary team to prevent SCI associated complications. Neurogenic bladder management reduces the incidence of urinary tract infection in these patients, which is the leading cause of bladder calculi and upper urinary tract complications such as pyelonephritis, renal scarring and renal failure. Additionally, regular and long-term follow-up is required to prevent these complications and to reduce mortality.⁷ In the literature, Patients directly under interdisciplinary team for rehabilitation had better functional outcome as compare to the others who did not receive comprehensive rehabilitation.⁸

Sajid et al.¹ have also highlighted the financial burden of managing gunshot related SCI in the context of a LMIC like Pakistan. Most patients with SCI are young males and the sole bread earner for the family. If the patient is unable to return to work or integrate into community, it can have negative long-term impact on the family earning. Thus, it is important to mention the role of vocational rehabilitation in these patients according to their capabilities for the better community reintegration.⁹ In many cases the high

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cost of spinal surgery and acute care does not leave much finances with the patient to engage in long term rehabilitation which offers a chance for community reintegration and improving functional outcomes. Therefore, in selected cases the conservative management may be considered over the surgical intervention in case of a complete SCI.¹⁰ The resources thus saved can be then be diverted towards long term SCI rehabilitation and community reintegration.

Authors have reported a follow-up of approximately 9 months.¹ This is a short-term follow-up considering that SCI is often a life-long and permanent disability, which should be followed for long to identify, prevent and manage long term complications adequately.

SCI rehabilitation services in LMIC like Pakistan are either underdeveloped or not available to most of the patients in need of these services. Usually provision of physical therapy and exercise are considered as the only form of rehabilitation. A patient with SCI needs much more than physical therapy and exercises. There is a need to develop SCI rehabilitation services and involve other rehabilitation professionals. For example, an occupational therapist can assist the patient in learning new skills for activities of daily livings and transfer training. Similarly, psychologist helps the patient to cope with psychological trauma to accept SCI as permanent disability.³ Another challenge for the SCI patients in Pakistan is the lack of appropriate counseling about the nature of the disease and long-term consequences of the spinal cord damage. As a result, patients often have false hope of walking again. This results in extra financial burden due to treatments like stem cells injections, ozone therapy and spiritual healing. Therefore, there is a need to increase the awareness about timely SCI rehabilitation.

At present, there is no SCI registry in Pakistan to determine the actual burden of SCI patients in the country.¹¹ There is dire need to develop national data base for these patients and to establish multidisciplinary rehabilitation centers for the people with SCI related disabilities.

Response from the editorial office

Dear Dr. Amara Ilyas and Farooq Azam Rathore:

Thank you very much for your insightful comments on the article **“Gunshot injury to spine: An institutional experience of management and complications from a developing country”** published recently. We agree with your opinions and believe that:

- (1) To improve the prevention and treatment of complications following spinal cord injury (SCI), international coordination is indeed imperative and urgent;
- (2) Management of SCI complications is a worldwide challenge, which seems more severe in middle and low-income countries, but it is undeniable that similar conditions are not rare in developed countries and thus cannot be ignored either;

- (3) Clinically it is important to actively prevent and handle SCI complications at the early stage after SCI; at the same time, relevant basic research should be strengthened, especially the early prevention and treatment following SCI;
- (4) Generally speaking, the key strategy for SCI management is prevention. Moreover we insist that basic research on neurological rehabilitation is the technique breakthrough, which should be highly focused and strengthened in spite we have a long way to go.

Declaration of competing interest

None.

Disclosures

None.

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