Acute Spinal Cord Injury- The Unchanged Challenges!

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Acute Spinal cord injury (ASCI) is a devastating condition causing permanent disability in the affected individual thereby causing a lifelong morbidity. The injury could be traumatic or non-traumatic. Irrespective of the cause, the rehabilitation processes are invariably the same and multidisciplinary. Majority of the victims are productive youth and this injury totally shatters their life and the life of their families.

The annual incidence of traumatic spinal cord injury in the developed countries varies from 11.5 to 53.4 per million population. Though, these figures are from late seventies, not much seems to have changed in last 40 years. Recent studies from Ireland and Canada have reported the annual incidence of traumatic ASCI between 35 to 50 per cent. The epidemiological data on acute spinal cord injury in a developing country like ours is still lacking. It is necessary to know the prevalence of this condition to set up more number of advanced trauma care units. Also, it is important to know the cause of trauma and the time taken from the occurrence of injury and getting primary care and transfer to a centre having expertise in managing spinal cord injuries. Early initiation of treatment can modify the final outcome in the injured victim. Hence, it was thought to address these issues in a Special Issue which can act as a handbook for the treating physicians, operating surgeons and the entire team involved in the process of rehabilitation.

It is intriguing to know that fall from top of trees or roof or electricity pole or terraces constitute around 45% of ASCI followed by road traffic accidents (35%) as reported in a study conducted by Singh R from Rohtak. Many a times, these injuries are accidental and can be easily avoided. Similar results of ASCI where fall from height is the commonest cause have been reported by Bhide et al, Chako et al and Shanmugasundaram. This is in contrast to the western studies, where most of the cases are road traffic accident victims.

In this special issue of Contemporary Management of Spinal Cord Injury, Srinivasan has recommended the measures to lower the burden of spinal cord injury by identifying and preventing the risk factors and improving the pre-hospital management. The need for training people involved in giving primary care to spinal cord injury victims and care to be taken while transporting these patients is emphasised in this article.

It is a well known scientific fact that neurons cannot regenerate. With an acute primary insult to the spinal cord, there is a cascade of secondary events that follow. Release of myeloperoxidase exacerbates the tissue damage after ASCI because it generates hypochlorite acid which is an oxidising agent and a neurotoxin. Various other free radicals like nitric oxide, malondialdehyde, superoxide dismutase, glutathione peroxidase are also important components in causing further damage. Hence, it is essential to interrupt the secondary cascade that causes damage to the spinal cord. The role of pharmacological agents has been elaborately discussed by Alok Sharma. The NASCIS I, II and III trials recommending the use of methylprednisolone, its early use, the dose and duration have been discussed in details which is interesting to read. GM-1 ganglioside is another agent which has been studied extensively in ASCI. Naloxone and tirilazad are also used but to a lesser extent. Dexamethasone is widely used where Methylprednisolone is not available. Experiments in rats have shown that methylprednisolone and Edaravone can be beneficial following ASCI in improving the neurological outcome. Edaravone is a scavenger of hydroxyl radicals.

Other agents which may prove to be of use in the future are neurotrophin, 4-aminopyridine, activated macrophages, fetal neural transplantation and stem cells. Modern medicine is revolutionizing day by day and everyday some novel therapy comes up as a remedy for a disease which previously was considered incurable. Stem cell therapy is one of them. The role of stem cells has been aptly discussed by Chhabra in the article on “Stem Cell Therapy in Spinal Cord Injury: Current Concepts”. More clinical trials are needed to establish the role of stem cells in ASCI, in today’s era of evidence-based medicine.

While medical therapy plays a crucial role in preventing the secondary cascade of injury, the role of surgery is very important. The classification of types of injuries and their surgical management is described by Sajan Hegde in the article on Operative Management of Spinal Injuries.

Rehabilitation plays a major role in the management of patients with ASCI. It is a team work consisting of the physiotherapist, occupational therapist, nursing care, psychologist, emotional support from friends and family members, vocational counsellor, dietician, speech therapist, social worker and a psychiatrist. Each individual involved in rehabilitation has an overlapping role and it is intermingled with each other to put back the victim to his near normal pre-morbid condition. The rehabilitation process may vary from individual to individual which has been described by Dr. Sanjeev Dua in the current issue.

In a resource limited country like ours, there is shortage of manpower at all the stages after ASCI. There is a delay in getting timely help, long distances during transport to the nearest hospital, non-availability of spinal surgeon in all centres and the most important factor “affordability”. Majority of these victims may not be able to bear the cost of therapy and those who can bear the cost may not always reach early so that neurological disability may be minimised. With the revolutionised treatment modalities, there is a definite positive hope to recover. More Indian data needs to be generated to address the challenges in this medical emergency leading to severe morbidity and mortality. Various centres of excellence in traumatic spinal cord injury need to be established in various parts of the country and identify trained personnel in handling these patients.

References


7. Shanmugasundaram TK. The care of SCI patients in the developing nations—can we stem the rot? *Paraplegia* 1988;26:10-11.


