

Controversies in the Acute Management of High Spinal Cord Injuries, an Update and Opinion

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Abstract

The incidence of spinal cord injuries is the lowest of all major trauma, with devastating impact on the individual affected. The immediate treatment, though it remains mainly supportive, in many situations will determine the outcome and the cost of health care. Standards of care are unfortunately still lacking, this is mainly due to the existing controversies and lack of effective treatment of the injured cord. The author discusses here some of the controversial points based on literature review and personal observation.

Abbreviations: MP: Methyl Prednisolone; NASCIS: National Acute spinal Cord Injuries Study; SDI: Spinal Decompression in Acute

Introduction

Timing of surgery

It is well known that secondary insult to the spinal cord may occur because of mechanical as well as physiological instability, an injured cord will exhibit a cascade of pathological processes involving immune mechanisms and mediators which will lead to swelling of the cord rendering it susceptible to iatrogenic injury including hypoxia and hypotension, this is found to be maximal at 24 hours. The argument for early surgery should mean that it is carried out within 4 hours of injury i.e. before cord swelling become apparent; complex, or lengthy surgery at the stage of spinal cord oedema could be harmful. Reports exist that outcome of surgery done at 24 to 72 hours is not associated with better neurological improvement or shorter length of stay in hospital, at the same time reported a high percentage of complications ranging between 24 to 41% [1-20].

It has to be noted that in cervical and upper thoracic cord injuries, surgical stabilisation is not synonymous with early mobilisation, that was mainly due to the multisystem physiological dysfunction and instability associated with SCI, which may take few weeks to settle. Optimum time for surgical intervention remains a question and it is the opinion of the author that surgery is best done within 4 hours of injury or be deferred later provided that alignment of the spine is corrected and maintained by traction in case of cervical spine injury and bed rest (postural reduction) in thoracic injuries, this is in addition to the standard supportive measures aimed at maintaining adequate cord perfusion and oxygenation [20-30].

High Dose Methyl Prednisolone

Since the publication of the National Acute spinal Cord Injuries Study (NASCIS) II, high dose methyl Prednisolone administration in the first 8 hours became a standard treatment for the acutely injured spinal cord. Evidence is now accumulating that there is no appreciable functional improvement after such treatment despite a modest improvement in motor scale, in addition it has been shown that the study itself contain statistical artefacts. Although steroids continue to be given to patients with spinal cord injury in many institutions, evidence of deleterious effects continues to accumulate. This controversy led to surgeons having to administer the drug for fear of litigation rather than due to a belief in improved clinical outcomes. After critical evaluation of the data available it is concluded that there is no sufficient evidence to support the use of MP in acute SCI [30-45].

Spinal Decompression in Acute SCI

It has been shown that many incomplete SCI patients, neurologically & functionally improve after conservative treatment and / or surgical stabilisation only without decompression of a traumatic spinal stenosis. Also literature show that closed or open reduction of dislocated facets in case of cervical spine offers a satisfactory decompression especially in the first few hours after injury, with good clinical outcome (in some series up to 85%) in terms of neurological improvement. After critical analysis of the available literature, there is clearly no correlation between the percentage canal encroachment and the extent of neurological deficit, also neurological recovery does not correlate with canal decompression in acute trauma of the spinal cord. Neurological

decompression and stabilisation, however is indicated in cases of neurological deterioration due to epidural collection or inability to maintain spinal alignment [45-55].

Conclusion

Management of acute SCI is still sub-optimum in many areas due to the relative rarity of such devastating injury; more high quality research is required to arrive at consistent standards of care or protocols of management. It is the opinion of the author that the need arises for the creation of spinal injuries centres covering a wide population area, with an integrated multi-disciplinary input and a comprehensive care routine of management from the early hours of injury; this will undoubtedly solve the competency issue of the treating team.

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