Spinal cord injury management

The major causes of death in spinal cord injury (SCI) are aspiration and shock ¹⁾.

Initial survey under ATLS protocol: assessment of airway takes precedence, then breathing, then circulation & control of hemorrhage ("ABC's"). This is followed by a brief neurologic exam.

NB: other injuries (e.g. abdominal injuries) may be masked below the level of SCI.

Any of the following patients should be treated as having an SCI until proven otherwise:

1. all victims of significant trauma

2. trauma patients with loss of consciousness

3. minor trauma victims with complaints referable to the spine (neck or back pain or tenderness) or spinal cord (numbness or tingling in an extremity, weakness, paralysis)

4. associated findings suggestive of SCI include

a) abdominal breathing

b) priapism(autonomic dysfunction).

Trauma patients are triaged as follows:

1. no history of significant trauma, completely alert, oriented, and free of drug or alcohol intoxication, with no complaints referable to the spine: most may be cleared clinically without the need for C-spine X-rays; see Radiographic evaluation

2. significant trauma, but no strong evidence of spine or spinal cord injury: the emphasis here is in ruling out a bony lesion and preventing injury

3. patients with the neurologic deficit: the emphasis here is to define the skeletal injury and to take steps to prevent further cord injury and loss of function and minimize or reverse the present deficit. The pros and cons of the high-dose methylprednisolone protocol should be weighed if a neurologic deficit is identified

Assessment

ATLS® algorithm and spine trauma assessment. In Step "A" cervical spine (C-Spine) protection is indispensable. Every unconscious patient is stabilized by stiff-neck. Patients with signs of chest injury in step "B" and abdominal injury in step "C", especially retroperitoneal are highly suspicious for thoracic (T-) and/or (L-) lumbar spine injury. Normal motor exam and reflexes do not rule out significant spine injury in the comatose patient. Abnormal neurologic exam is a sign for substantial spinal column injury including spinal cord injury (SCI). Log roll in step "E" is important to assess the dorsum of the cervical to the sacral spine and to look out for any signs of bruising, open wounds, tender points and to palpate the paravertebral tissue and posterior processus in search for distraction

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injury. Spine precautions should only be discontinued when patients gain back consciousness and are alert to communicate sufficiently on spinal discomfort or neurologic sensations before the spine is cleared ²⁾.

Data on all patients with traumatic spine injuries admitted to the Alfred Hospital, Melbourne between May 1, 2009, and January 1, 2011, were collected:

There were 965 patients with traumatic spine injuries with 2,333 spine trauma levels. The general cohort showed a trimodal age distribution, male-to-female ratio of 2:2, motor vehicle accidents as the primary spine trauma mechanism, 47.7% patients with severe polytrauma as graded using the Injury Severity Score (ISS), 17.3% with traumatic brain injury (TBI), the majority of patients with one spine injury level, 7% neurological deficit rate, 12.8% spine trauma operative rate, and 5.2% mortality rate. Variables with statistical significance trending toward mortality were the elderly, motor vehicle occupants, severe ISS, TBI, C1-2 dissociations, and American Spinal Injury Association (ASIA) A, B, and C neurological grades. Variables with statistical significance trending toward the elderly were females; low falls; one spine injury level; type 2 odontoid fractures; subaxial cervical spine distraction injuries; ASIA A, B, and C neurological grades; and patients without neurological deficits. Of the general cohort, 50.3% of spine trauma survivors were discharged home, and 48.1% were discharged to rehabilitation facilities. This study provides baseline spine trauma epidemiological data. The trimodal age distribution of patients with traumatic spine injuries calls for further studies and intervention targeted toward the 46- to 55-year age group as this group represents the main providers of financial and social security. The study's unique feature of delineating variables with statistical significance trending toward both mortality and the elderly also provides useful data to guide future research studies, benchmarking, public health policy, and efficient resource allocation for the management of spine trauma ³⁾.

1)

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