

Improving spinal trauma management in non-specialist centres

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Abstract

Fractures of the vertebral column are increasing in incidence. Even though spinal trauma is increasingly being managed in specialist units, these patients often still initially present to district general hospitals. Due to lack of exposure to these patients, the attending Orthopaedic Senior House Officer may not always be aware of current best practice in the acute management of these patients beyond immediate Advance Trauma Life Support measures.

There is concern that initiation of management may be delayed as a result of lack of a concise documented plan. The physiotherapy team requires specific instructions from the orthopaedic team before they can attempt to mobilise these patients. Lack thereof may lead to inappropriate prolonged immobilisation, prolonged hospital admission and, as a result, medical complications such as aspiration pneumonia, other nosocomial infections or pressure sores.

An audit of departmental practice in two district general hospitals in the London and KSS deaneries demonstrated that a lack of easily accessible guidelines led to delays in definitive management of these patients with several episodes of medical concern.

A proforma was devised in conjunction with the physiotherapy department and the regional spinal orthopaedic service in order to aid doctors in formulation of these management plans. These were rolled out effectively in both centres and re-audit in the first centre demonstrated marked improvement in patient care. Re-audit in the second hospital is ongoing.

Problem

Fractures of the vertebral column are increasing in incidence (1). With centralisation of specialist services many orthopaedic departments rely on telephone advice from their designated regional spinal centre to formulate a definitive management plan for patients with spinal column injuries. Breakdown or delays in this process may lead to deleterious effects on the patient's health. Without a clearly documented management plan including restrictions and permitted mobility there may be inappropriately prolonged periods of immobilisation. This can put the patient at risk of medical complications such as pressure sores, aspiration pneumonia and other nosocomial infections.

Background

Due to the potentially serious neurological consequences of traumatic vertebral column injury, it is vital that all presenting patients be assessed early and relevant precautions are taken. Immediate management in pre-hospital scenarios or within the Emergency department is standardised by the ATLS guidelines and universally adhered to. This results in immediate stabilization and immobilisation of the spine followed by clinical and radiological assessment of any injury sustained.

However there do not appear to be any well publicised guidelines for the next most appropriate steps. In specialised spinal units, a neurosurgeon or spinal orthopaedic surgeon is always on hand to provide expertise and create an initial management plan. In district general hospitals, or even in larger teaching hospitals that do not

contain spinal units, the orthopaedic team will often not have the required experience to formulate a definitive and appropriate management plan.

This presents several potential problems: Patients may remain immobilised when the nature of the spinal injury does not necessitate this. This can lead to prolonged hospital stays and increased exposure to nosocomial infections. It may also lead to development of pressure sores due to bed rest, lack of appropriate nutrition due to inability to sit up to eat and even aspiration pneumonia due to supine position.

Perhaps of greater worry though is that an unstable injury may not be recognised by inexperienced doctors. These patients may be mobilised inappropriately with disastrous consequences.

We propose that, in non-specialist units, if there is an easily accessible proforma or set of guidelines for formulation and documentation of initial management that can be used by all on-call junior doctors, these adverse events can be avoided. These guidelines would include urgent discussion with the regional spinal unit and a standardised set of questions to ask the specialist providing the advice.

Baseline Measurement

We performed a retrospective audit of a six month period in two regional district general hospitals that did not have a spinal unit. From September 2011 to February 2012 in hospital 1, 19 patients presented to the emergency department with spinal injuries that required admission but did not meet the criteria for urgent transfer

to the regional specialist centre. From July - December 2012 19 patients presented to hospital 2.

We examined the clinical notes of these patients to ascertain when an appropriate definitive management plan was documented.

The criteria we assessed were:

1. Documentation of appropriate neurological examination on admission
2. Time from admission to documentation of definitive management plan
3. Documentation of stability of injury
4. Documentation of permitted mobility
5. Documentation of necessary precautions
6. Any adverse events or medical concern in the patients' inpatient stay related to the injury and management.

Due to the potential severity of any adverse events we set standards of 95%. These standards were not met in any of the criteria audited.

Design

We introduced a spinal injuries proforma that is easy to access on all trust computers. The admitting doctor can print this out for completion during the assessment of the patient and subsequent discussion with the specialist centre.

A standard protocol for assessing neurological status is set out by the American Spinal Injury Association (ASIA). This is used widely in the UK by neurosurgeons and is an easy-to use and appropriate tool to be used when discussing the patient's neurological status with another party. Measures should be taken to raise awareness of this proforma.

We have created a second proforma to be used alongside the ASIA score that the admitting doctor can have at hand when discussing the patient with the specialist centre. It consists of a list of specific questions relating to the management of the patient with a spinal injury. This ensures that all the necessary information is obtained and clearly documented. We have placed both ASIA and our local proformas on the trust computer network where they are readily accessible. We have highlighted this to all surgical and orthopaedic SHOs.

Strategy

Using formal presentations at monthly M+M meetings, email and face-to-face interaction the proformas were introduced to clinical practice. They had excellent initial uptake with the result that in the first eight weeks of use they were being included in patient notes 96% of the time in hospital 1 and 100 % of the time in hospital 2.

See supplementary file: ds1839.docx - "PDSA Cycles (1)"

Post-Measurement

The re-audit in hospital 1 showed significant improvement in all measured criteria:

Neurological exam documentation improved from 74% to 100%

Average time from admission to documentation of plan decreased significantly

Documentation of spinal stability improved from 44% to 95%

Documentation of precautions improved from 53% to 100%

Documentation of permitted mobility improved from 26% to 95%

Delay in initiation of treatment went decreased from 59% to 11%

Episodes of serious medical concern related to management of the spinal injury patient were reduced from 37% (7/19) to 6% (1/18).

The one episode of serious medical concern during the re-audit period was recorded in the single incidence when the new spinal proforma was not used.

See supplementary file: ds1840.ppt - "Spinal Audit - RSXH results slides"

Lessons and Limitations

The only problem encountered was raising awareness of the proformas. At hospital 1 we have managed to get a desktop icon placed on all trust computers. This significantly improved availability. The same is hoped to be introduced at hospital 2 shortly. Hospital 2 has specifically designed orthopaedic clerking proformas. Even though it is not practical to incorporate our full spinal proforma into the general orthopaedic proforma, we hope to include a prompt that will guide the admitting doctor appropriately. This intervention could be rolled out nationally if other centres demonstrate benefit to patient safety by using it.

Conclusion

We identified that Orthopaedic senior house officers may not always have clinical experience of acute spinal trauma. In district general hospitals where they are the attending specialist doctor they may not be aware of the next most appropriate steps in management of these patients.

We audited clinical practice in two district general hospitals. Our results confirmed our hypothesis. Standards were not met in any of our audited criteria. As a result we devised and introduced specific proformas for thoracolumbar and cervical trauma patients that provided a template for clerking SHOs and introduced them into clinical practice in both hospitals.

On re-audit in hospital 1 there was significant improvement across all criteria as well as excellent uptake of the pro forma.

Re-audit in hospital 2 is ongoing.

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Declaration of interests

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