Canadian C-spine Audit

Appropriateness of C-spine Requests in Adult Spinal Injury Assessment ID 10371

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Introduction

- Injury to the C-spine can be a significantly debilitating and life changing event.
- The most common causes are road traffic collisions, falls, violent attacks, sports injuries and domestic incidents.
- It affects all ages, but young to middle aged men and older women are at highest risk in the UK.
- Initial assessment includes selecting the most appropriate imaging modality to identify a C-spine injury .
- Evidence supporting CT as the direct first line imaging modality over plain radiography, in patients aged 16 or over who are considered **high risk** for C-spine injury, is well documented in current literature.

Aims and Objectives

To establish whether a newly instituted head and neck care bundle (a checklist document), following recommendations by the initial audit 'appropriateness of C-spine Radiograph Requests in Spinal Injury or direct CT C-spine in accordance to NICE guidance NG41' showed an improvement in the use of the correct first time modality (X-ray or CT).

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Methods

This was a retrospective study using the 'CRIS system' to evaluate all patients that attended accident and emergency in the months of January and February 2019. Thirty-five patients had C-spine radiographs and 127 patients had C-spine CT scans. The patient were categorised into high and low risk based on 'NICE guidance NG41' and the use of patient notes via 'Patient First'.

Results

Data was collected and compared with the first audit (ID1614). 74.4% of patients received the appropriate first line radiological modality, compared with 90.7% of patients after the newly instituted head and neck bundle.

Discussion

High risk patients were supposed to have a CT first line while low risk patients were supposed to have plain films as a first line modality. The increase in percentage of patients receiving the correct first line modality was thought to be as a result of the newly instituted head and neck care bundle. Whilst this is an improvement, there were still 15 patients who were at high risk of c-spine fracture who did not receive the appropriate first line modality (CT) and therefore could have been missed.

A&E C-spine Pathway

ID10371

ID1614

Completing the audit cycle

Cervical Spine Injury Assessment		<Name>	<DOB>	<ED Attendance>
		<Age>	<DOB>	<ED Attendance>
		<Group Number>	<NHS Number>	
HISTORY				
What was the position of the head / neck during the injury?				
Cervical Spine pain ? ☐ Yes ☐ No				
Cervical Spine stiffness ? ☐ Yes ☐ No				
Numbness or Tingling or weakness of ARMS or LEGS ? ☐ Yes ☐ No				
EXAMINATION				
Cervical Spine Bony Tenderness (where?) ☐ Yes ☐ No				
Paravertebral Tenderness (where?) ☐ Yes ☐ No				
Ambulatory ☐ Yes ☐ No				
Normal Tone & Power Arms & Legs ? ☐ Yes ☐ No				
Phosis ? ☐ Yes ☐ No				
RADIOLOGY (see over)				
CT Neck ☐ Any Group 1 finding PLUS any GROUP 2 finding				
Cervical Spine X-ray ☐ Any Group 2 finding PLUS all GROUP 3 findings are ABSENT (or none tick)				
Unable to rotate neck >45° left or right				
No X-ray indicated ☐ None of the above ticked				
RESULT:				
DIAGNOSIS				
MANAGEMENT				
☐ Patient Advice Leaflet ☐ TTD ☐ Other (state)				
☐ Medication				
FOLLOW UP				
☐ None ☐ Other				
SIGNED: _____ DOCTOR / NP (print name) _____ DATE: _____				

GROUP 1	Yes	No
GCS<13		
Focal Neurological Deficit		
Abnormal Vital Signs		
Severe Neck Pain		
High Risk Mechanism (see box 1) AND neck pain OR visible supraclavicular injury OR painful thoracic injury		
GROUP 2	Yes	No
Age>65yr		
GCS<13		
Incontinence		
Dementia		
CT Head indicated		
Inhalated patient		
CT for regional trauma		
Vertebral Disease (see box 2)		
Obtaining adequate X-Ray views very unlikely eg. body habitus		
GROUP 3	Yes	No
Simple Rear End Shunt (see box 3)		
Delayed onset of pain		
Ambulatory		
Sitting whilst in ED		
BOX 1: High Risk Mechanism		
• Fall greater than 1m or 5 stairs		
• Axial load		
• <45deg collision (combined)		
• Roll-over or ejection from motor vehicle		
• Accident involving recreational motorized vehicle		
• Bicycle collision		
• <15 years age		
• Heavy lift or representation		
• Vertebral disease		
BOX 2: Vertebral Disease		
• Ankylosing spondylitis		
• Rheumatoid Arthritis		
• Previous neck surgery		
• Spinal Stenosis		
BOX 3: Simple Rear End Shunt		
• Car hit by another car only		
• Car hit pushed into any other vehicle		
• Not high speed impact		