

PAEDIATRIC CERVICAL SPINE INJURIES

Learners Guide

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PRE-READING

Resources to explore prior to the teaching session:

<https://pedemmorsels.com/pediatric-cervical-spine-injury/>

<https://pedemmorsels.com/airbag-injury-and-children/>

<https://dontforgetthebubbles.com/paediatric-c-spine-injuries/>

<https://dontforgetthebubbles.com/c-spine-x-ray-interpretation/>

CASE SCENARIO 1

A 13 year old boy arrives in your ED. He came off his bicycle at speed whilst engaged in a downhill mountain racing contest. He was wearing a helmet and protective clothing but hit his head against a tree as he landed.

He did not lose consciousness. He describes immediate onset neck pain which now persists.

Volunteer ambulance services were supervising the event and treated his pain with paracetamol and ibuprofen whilst preparing him for transfer in full spinal precautions. He is brought into your ED strapped to a spinal stretcher with a hard cervical collar in place as well as head blocks and tape.

On handover it is noted that he felt a weird sensation in his right arm at the time of the event which lasted perhaps 3-5mins and has not returned. The crew found his neck to be diffusely tender on examination.

What features in history and on examination are we concerned about regarding the potential for cervical spine injury?

How do we take handover of these patients and protect them whilst we work up their injury?

CASE SCENARIO 2

A 10 month old girl who was a back seat occupant in a rearward facing baby seat is involved in a head on RTC at 30kph (18mph).

The incident occurred in a housing estate. She presents with her Mother who was the restrained driver for review at a mixed Adult and Paediatric ED.

You have already assessed and cleared Mum from any serious injury. You now examine her baby who is crawling away from you on the bed saying “mama”.

Discuss how we need to adapt our assessment to suit younger children.

Are we worried about this baby and do we want imaging?

Outside of the factors looked at in the large studies, are there any other items which we should consider important in history and on physical examination for all children?

MORE ADVANCED DISCUSSION (20MINS EACH)

ADVANCED CASE SCENARIO 1

An 11 year old boy is involved in a single vehicle RTA as a front seat passenger restrained in a booster seat. The vehicle slid at 120kph (75mph) and spun out of control demolishing a fence at the side of the dual carriageway and impacting a treeline before being propelled back onto the road.

There is extensive damage to the four door saloon and all airbags deployed. The boy's father was driving at the time and they self extricated by kicking out a front door which was slightly wedged by the distorted frame.

They stood by the side of the road awaiting help to arrive.

The father states he is fine apart from a few scrapes from broken glass and declines further assessment by Paramedics.

The son complains that he now notices neck pain on moving his head backward and forward. EMS reviewed and decided to treat him with full spinal precautions. He arrives in your ED and is assessed as having no evidence of bruising or deformity of the neck and no midline bony tenderness.

He has a normal neurological examination. His neck pain is persistent despite ibuprofen and paracetamol given by EMS en route. He is reluctant to move it much.

Do you want to image this child and if so, what imaging do you want to perform?

ADVANCED CASE SCENARIO 2

A 2 year old girl presents with her Father after landing awkwardly post a fall down the last two steps of stairs in her home yesterday evening.

She has been starting to walk up and down the stairs and is always supervised. Last night, she complained of some pain which responded to the paracetamol syrup given to her by Dad. She slept well but since this morning, she has been holding her neck strangely and prefers to lie down. You are the senior registrar on duty and one of your colleagues asks for your review.

She is lying in a position of comfort on her left side. When you go to examine her she sits up and clings to her Father crying and making it clear that she does not want to be examined, saying bye-bye.

She has a torticollis to the left and is moving all limbs. Analgesia was given and plain films were obtained. These looked normal to you and the patient was reviewed and looks more comfortable now despite the torticollis.

What is your next step? Should we be concerned?

Outline your steps in this patient's management; what will you tell her parents?

QUIZ QUESTIONS (10 MINS)

Question 1.

What percentage of paediatric spinal injuries are located in the cervical region?

A - 12%

B - 40%

C - 50% or more

D - 2%

Question 2.

Which of the following mechanisms in history are concerning for a cervical spine injury?

A - Motor Vehicle Collision at a speed of above 30kph (18mph)

B - Diving into a pool

C - Fall from greater than body height

D - Transient neurological symptoms

E - All of the above

Question 3.

Plain films are not sensitive enough in children to be our first choice in most circumstances where imaging of the cervical spine is deemed necessary.

A - True

B - False

Infographic of the take home tips

- 1** Cervical spine injury represents 1-2% of all paediatric trauma.
- 2** A good clinical assessment is paramount. Know the concerning history and examination features for cervical spine injuries.
- 3** Know how to handle the suspected spinal injury patient with care.
- 4** Be aware of your local pathways and protocols for this injury.
- 5** Always ask for senior help in selecting and interpreting cervical spine imaging and performing clinical clearance.

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