

Head and Neck Injuries in Children

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Overview

- ▶ Introduction
- ▶ Head injuries
- ▶ Case studies
- ▶ Neck injuries
- ▶ Case studies
- ▶ Questions
- ▶ Summary
- ▶ References

Introduction (1)

- ▶ Very, very common presentations in Paediatric EM
- ▶ Often role of ED middle grade to assess/advise on treatment and investigation
- ▶ Lots of similar guidelines exist:
 - ▶ Head Injury: PECARN/CHALICE/CATCH/NICE
 - ▶ Neck Injury: Canadian/Nexus/NICE
- ▶ Standard practice in UK = NICE guidelines (2014)

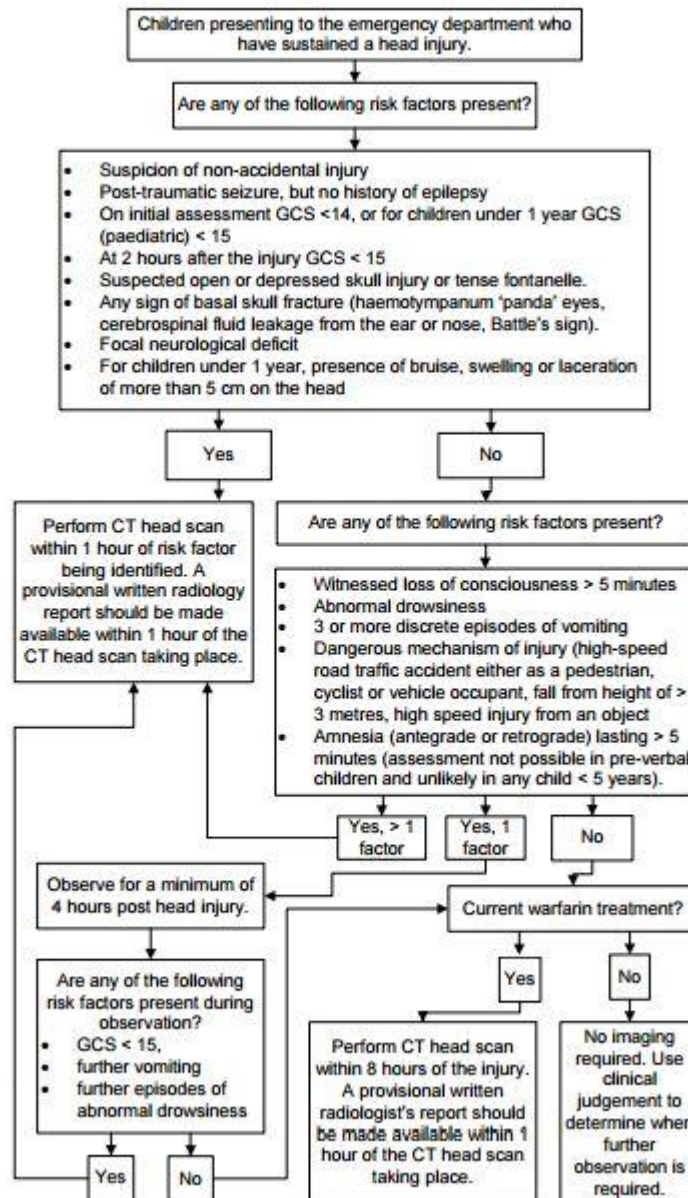
Introduction (2)

- ▶ NICE guidelines - look complex – previously much more simple!
- ▶ Broadly reflective of typical clinical practice in UK
- ▶ Despite relative clarity of pathway, can be tricky to apply in clinical practice at times
- ▶ Session aims to focus on clinical reasoning and decision making (i.e. not examination technique/radiology interpretation)

Head Injuries in Children



Algorithm 2: Selection of children for CT head scan



Head Injury - NICE Guidelines (2014)

- ▶ Focussed around the decision whether or not to perform plain CT head
- ▶ Acts to group patients into 3 categories:
 - ▶ 1) High Risk – need CT head scan within 1 hour
 - ▶ 2) Moderate Risk – need observation +/- CT scan
 - ▶ 3) Low risk – discharge home with advice

Group work



Head Injury - Case 1

- ▶ 10 month old girl brought in by parents
- ▶ Fell off kitchen unit when parents changing nappy before bed approx 2 hours ago
- ▶ Hit head on floor – no LOC, cried instantly
- ▶ Vomited x1 since
- ▶ o/e asleep, looks peaceful!

Case 1 - questions

- ▶ How should you manage this patient?
- ▶ What factors in the history/presentation influence your decision?
- ▶ What other concerns does this presentation raise?

Head Injury - Case 2

- ▶ 11 month old brought in by mum - fell off sofa 6 hours ago whilst playing with older brother
- ▶ Cried briefly then settled
- ▶ Bruise to forehead
- ▶ Vomited x3 over next 2 hours
- ▶ Since playing happily – remains cheerful, alert
- ▶ Mum rang 111 – advised to come in to ED via ambulance

Case 2 - questions

- ▶ How would you investigate and manage this patient?
- ▶ What factors in the history affect your decision?
- ▶ What would you wish to clarify in the history/examination? What other questions might you ask to help your decision?

Head Injury - Case 3

- ▶ Paediatric trauma call
- ▶ RTC – head on collision driver side - combined speed 60mph
- ▶ 3yr old girl restrained in car seat on rear passenger side
- ▶ No external signs injury
- ▶ GCS dropped transiently to 14/15 (drowsy) at scene so blue-light to resus

Case 3 - questions

- ▶ How would you manage this patient (in the context of a trauma call)?
- ▶ How would you investigate this patient?
- ▶ What other injuries might you suspect? How would you investigate them?

Head Injury - Case 4

- ▶ 13 year-old boy playing football
- ▶ Jumped to head ball, opponent landed on him
- ▶ LOC 1 min
- ▶ Vomited x1
- ▶ Since GCS 15/15
- ▶ c/o increasing headache

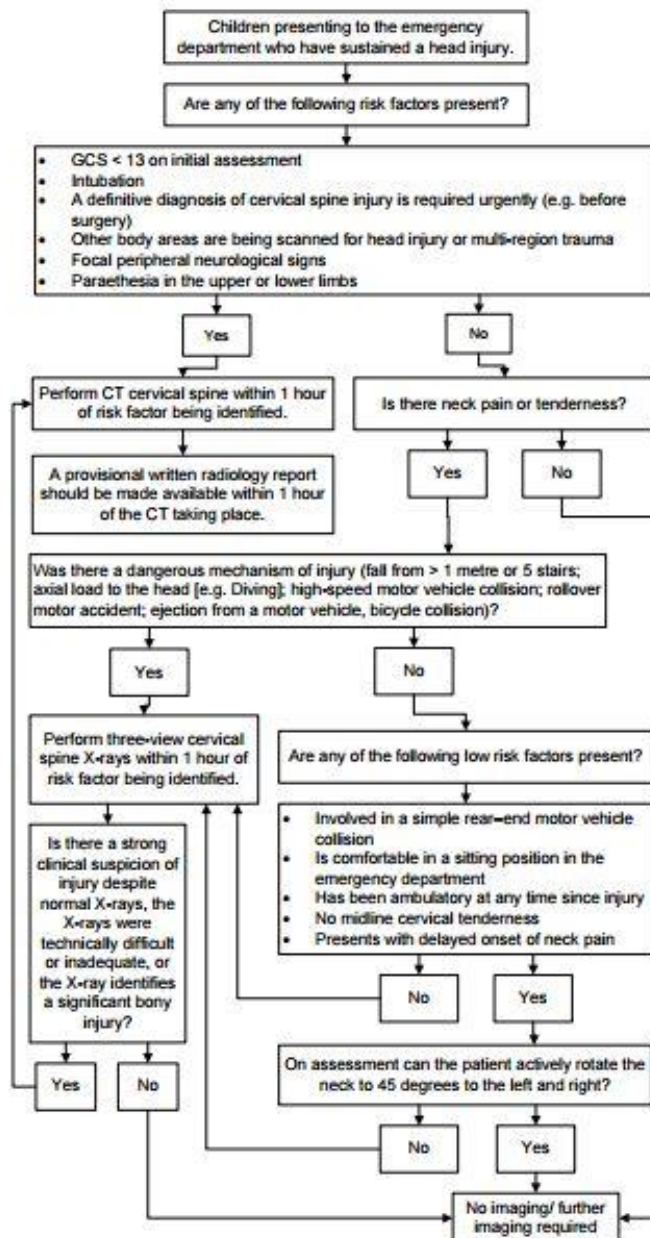
Case 4 - questions

- ▶ How would you investigate/manage this patient?
- ▶ What other injuries should you consider?
- ▶ What would your discharge criteria be?
- ▶ What advice would you give?

Neck Injuries in Children



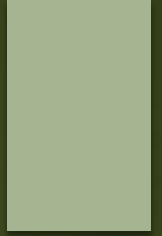
Algorithm 4: Selection of children for imaging of the cervical spine



C-spine Injury - NICE Guidelines 2014

- ▶ Again focussed around imaging of patient (XR/CT C-spine)
- ▶ Again patients grouped into 3 categories:
 - ▶ 1) Need immediate CT C-Spine – neurologically impaired, major trauma or undergoing head CT
 - ▶ 2) Need XR C-spine prior to examination
 - ▶ 3) Safe to examine neck (rotation 45 degrees R+L)
- ▶ Further consideration of whether to immobilise patient prior to imaging (APLS)

Group work



C-spine Injury - Case 1

- ▶ 6 year old girl playing on monkey bars in school playground 2 hours ago – 7ft
- ▶ Fell – landed on back of neck/head
- ▶ Since c/o neck pain and tingling left hand over thumb
- ▶ School called ambulance – immobilised in collar/blocks

Case 1 - questions

- ▶ How would you assess/investigate this girl?
- ▶ What other injuries would you look for?
- ▶ What would your actions be if the initial investigations were normal? What further investigations might be required?

C-spine Injury - Case 2

- ▶ 9 year old girl – passenger in RTC, restrained rear seat
- ▶ Hit from behind ?40-50mph
- ▶ Mobile at scene, self extricated
- ▶ Pain occurred in neck soon after extrication
- ▶ Immobilised by paramedics – brought to ED

Case 2 - questions

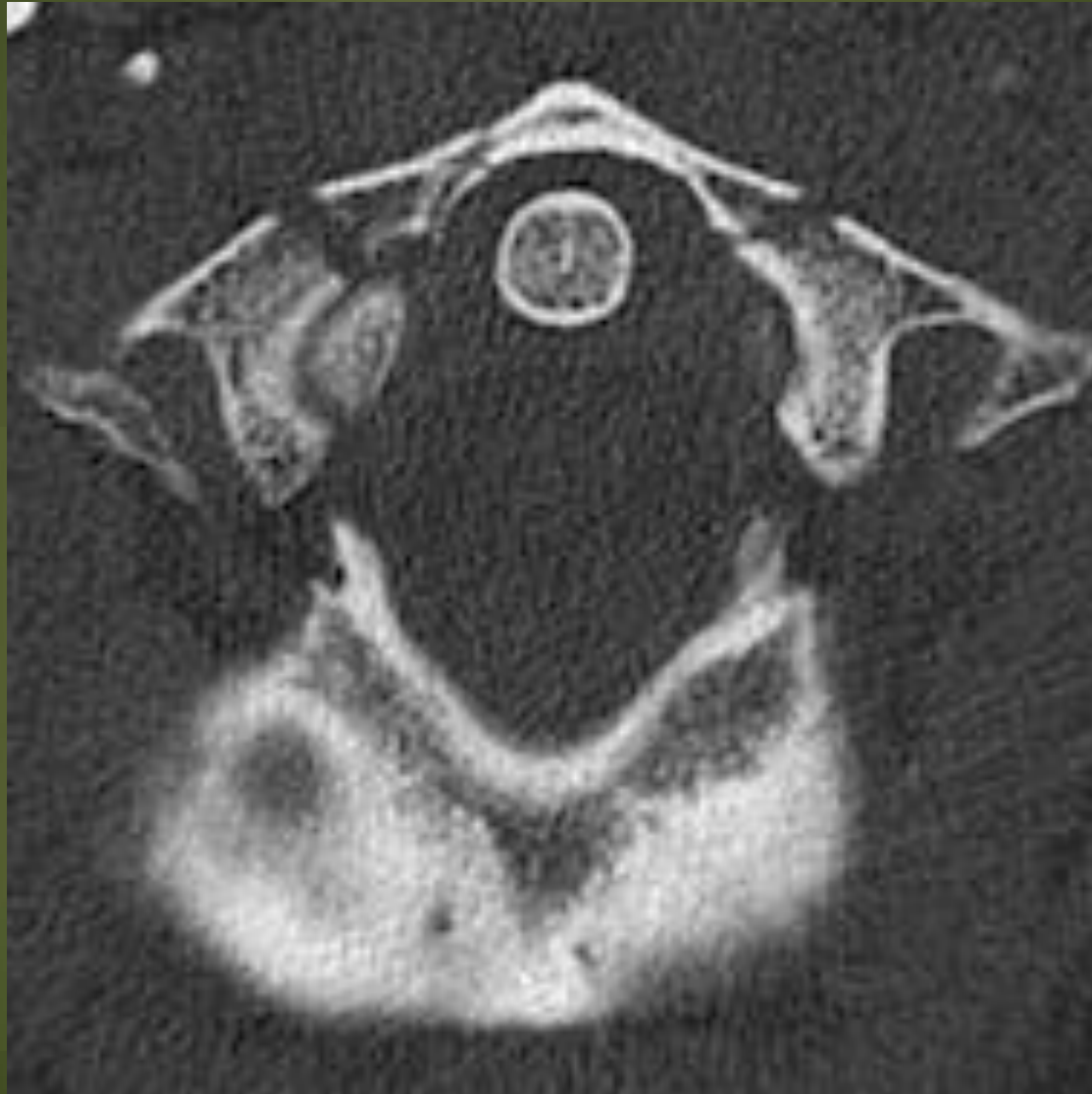
- ▶ Is it safe to examine this girls neck?
- ▶ What imaging might she require?
- ▶ What would you do if the imaging is
 - ▶ a) normal
 - ▶ b) abnormal?

C-spine Injury – Case 3

- ▶ 15 year old boy
- ▶ Walked into ED
- ▶ Diving yesterday in pool
- ▶ Hit head on bottom of pool
- ▶ Since c/o pain in neck, unable to get comfortable

Case 3 - questions

- ▶ Would you immobilise this patient?
- ▶ Is it safe to examine this patient's neck?
- ▶ What would be your imaging of choice if required?



C-spine Injury - Case 4

- ▶ 8 year-old boy – playing with older brothers earlier today ‘rough-housing’
- ▶ In headlock – since c/o increasing pain in neck
- ▶ Keeps neck rotated to right - states stiff ++, unable to straighten due to pain

Case 4

- ▶ How would you assess/manage this patient:
 - ▶ a) with regard to examination?
 - ▶ b) immobilisation?
 - ▶ c) with regard to imaging?
- ▶ Broadly speaking, what are the two key differential diagnoses?

Questions/Further Discussion

Summary

- ▶ Common presentations
- ▶ Usually in children represent minor injuries but occasionally life changing/threatening
- ▶ Use NICE guidelines
- ▶ Key is in the application (guidelines not rules)...

References

- ▶ NICE (2014) - **Head injury: assessment and early management**
 - ▶ <https://www.nice.org.uk/guidance/cg176>
- ▶ NICE (2014) - **Investigation for injuries to the cervical spine in children with head injury**
 - ▶ <https://pathways.nice.org.uk/pathways/head-injury#path=view%3A/pathways/head-injury/investigation-for-injuries-to-the-cervical-spine-in-children-with-head-injury.xml&content=view-index>
- ▶ Advanced Paediatric Life Support 5th Edition (2015)
- ▶ Life in the Fast Lane - <http://lifeinthefastlane.com>
- ▶ Tom Wade MD - <http://www.tomwademd.net/head-and-neck-injury-imaging-guidelines-from-nice-for-adults-and-children/>