WHY AND IN WHICH SCENARIOS SHOULD WHOLE SPINE IMAGING BE PERFORMED IN AHT?

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- HONORARIUM FOR LECTURES
- SERVED AS AN EXPERT WITNESS FOR CHILD ABUSE CASES
- NO OTHER DISCLOSURES





- WHY SHOULD WHOLE SPINE IMAGING BE PERFORMED IN AHT?
- IN WHICH SCENARIOS SHOULD WHOLE SPINE IMAGING BE PERFORMED IN AHT?



SPINAL LIGAMENTOUS INJURY

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SPINAL SUBDURAL HEMORRHAGE

- THE PROXIMAL EXTENT OF HEMORRHAGE CAN VARY FROM C1-T10.
- IN 50% OF CASES SPINAL SDH
 IS SEEN ONLY IN THE LOWER
 SPINAL CANAL.

SPINAL SDH IN AHT

- 14/32 CASES HAD HEMORRHAGE EXTENDING FROM THE CERVICAL SPINE REGION WITH 10/32 CASES STARTING FROM C1 IN CONTINUITY WITH POSTERIOR FOSSA.

18/32 cases had subdural bleed identified in the region of the thoracic and lumbar spine only

ANATOMY OF SPINAL SDH

• <u>3 QUESTIONS:</u>

- WHY IS IT IMPORTANT
- WHERE DOES IT COME FROM
- WHY DOES IT HAPPEN IN AHT

WHY IS IT IMPORTANT?

SPINAL LIGAMENTOUS INJURY:

• UNDERLINES THE FACT THAT WE ARE DEALING WITH A TRAUMATIC INJURY

SPINAL SUBDURAL HEMORRHAGE:

- AN IMPORTANT SIGN OF AHT TRAUMA AS IT IS RARELY SEEN IN ACCIDENTAL TRAUMA (WAS SEEN IN 1/70 TRAUMA CASE IN OUR PRIOR WORK WITH COMMINUTED AND DISPLACED OCCIPITAL FRACTURE)**
- MAY EXPLAIN THE MECHANISM OF INJURY **Reference: Choudhary AK, Bradford R, Dias M, Moore G, Boal D. Spinal subdural hemorrhage in abusive head trauma. Radiology 2012. 262. 216-223

WHAT IF YOU DON'T DO IT? INSTITUTIONAL IMAGING PREFERENCES

- HOW MUCH SHOULD WE IMAGE
- COST OF IMAGING STUDIES
- ANY CLINICAL SIGNIFICANCE OF THE FINDINGS
- WHEN SHOULD WE IMAGE

NO THORACOLUMBAR SPINE MRI

WHAT YOU
 WILL FIND

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NO THORACOLUMBAR SPINE MRI

- WHAT YOU WILL FIND
- WHAT YOU DIDN'T FIND!

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NO CERVICAL SPINE MRI

• WHAT YOU WILL FIND.

NO CERVICAL SPINE MRI

- WHAT YOU WILL FIND
- WHAT YOU DIDN'T FIND!
 - SIGNATURE OF A
 TRAUMATIC EVENT

IF YOU DIDN'T DO SAG TI

What you will find

IF YOU DIDN'T DO SAG TI

What you will find

What you didn't find!

IF YOU DIDN'T DO SAG STIR OF CERVICAL SPINE

 YOU WILL MISS CRITICAL FINDINGS AND THE CERVICAL SPINE STUDY WILL BE CONSIDERED INCOMPLETE

NO AXIAL SEQUENCES

IF YOU DIDN'T DO MRI SPINE: BUT CT ABDOMEN WAS DONE S

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- YOU ARE NOT GOING TO SEE IT!
- ISOINTENSE SPINAL SUBDURAL HGGE

WHEN SHOULD YOU DO IT

- IF AHT IS SUSPECTED: IMAGING OF CERVICAL SPINE
 - TO INCLUDE TRAUMA IN THE DIFFERENTIAL DIAGNOSIS
 - AND EXCLUDE A NON TRAUMATIC ETIOLOGY

WHEN SHOULD YOU DO IT

IF AHT IS SUSPECTED AND BRAIN MRI DEMONSTRATES INTRACRANIAL SUBDURAL HEMORRHAGE

ENTIRE MRI SPINE IS RECOMMENDED

- IF RESOURCES ARE NOT AVAILABLE
 - OR
- NO CLINICAL CONCERN FOR SPINAL INJURY
 - AND
- CERVICAL SPINE ALREADY DEMONSTRATES SPINAL SUBDURAL HEMORRHAGE,
- THEN IMAGING OF THE CERVICAL SPINE MAY BE SUFFICIENT.

TO SUMMARIZE

- COMMON INJURY PATTERNS IN AHT
 - DIRECT TRAUMA TO THE VEINS (LOLLIPOP SIGN) CAN BE IDENTIFIED IN APPROX 50%
 - CERVICAL LIGAMENTOUS INJURIES ARE VERY COMMON (78%)
 - SPINAL SUBDURAL HEMORRHAGE IS COMMON
- CERVICAL SPINE X-RAYS AND CT SCANS WILL MISS > 90% OF CERVICAL SPINE INJURIES IN AHT
- SPINAL SDH AND BRAIN HYPOXIC ISCHEMIC INJURY: STATISTICALLY CORRELATED
 WITH NECK LIGAMENT INJURIES

THANK YOU

 IF YOUR ORGANIZATION IS INTERESTED IN ENDORSING OUR CONSENSUS STATEMENT, PLEASE REACH OUT TO ME AT achoudhary@uams.edu OR THE EDITOR OF PEDIATRIC RADIOLOGY JOURNAL
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