HORSE RIDING

What are the odds of injury

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Tim Baker



How risky is horse riding?

What kind of injuries occur?

Three clinical decisions

DANGER

- 450 550 kg horse
- 45 55 km per hour
- Head 3 m above ground
- IO 000 N kick



Pride of Westbury, The Age, May 2009

RISK OF DEATH

Rodeo	?
Cross -country equestrian	> 20000*
Jumps races	1529
Flats races	1256
Horse riding	34

Mountaineering	> 793
Air sports	> 640
Motor sports	146
Fishing	37
Rugby	15
Boxing	5
Cricket	3

Deaths per 100,000,000 occasions (days)

MECHANISM



INJURIES





In number, type and severity of injuries

CASE

- A 28 year old woman fell from her stationary horse onto a low fence when it was spooked by a camera flash. She was not wearing a helmet, and lost consciousness for a few seconds. Her left chest struck the fence and her ribs were sore.
- She initially went home, but was convinced by a friend to see her doctor because she had developed a mild head ache and a sore neck. Her ribs still hurt on inspiration.
- On examination she was haemodynamically stable. Her ribs were moderately tender and her neck mildly tender.

SPINAL INJURY

IS A C-SPINE COLLAR NEEDED?



WHY NOT X-RAY EVERYONE?



Hard collars are uncomfortable. Once a collar is applied, the patient must usually wait for an X-ray or CT scan.

VALIDITY OF A SET OF CLINICAL CRITERIA TO RULE OUT INJURY TO THE CERVICAL SPINE IN PATIENTS WITH BLUNT TRAUMA HOFFMAN NEJM 2000;343:94-9

- no tenderness at the posterior mid-line of the cervical spine
- no focal neurologic deficit
- a normal level of alertness
- \diamond no evidence of intoxication
- no pain to distract the patient from the pain of a c-spine injury.

THE CANADIAN C-SPINE RULE VERSUS THE NEXUS LOW-RISK CRITERIA IN PATIENTS WITH TRAUMA STIELL NEJM 2003; 349: 2510-18



HEAD INJURY

IS A CT NEEDED?

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Damien Oliver on Media Puzzle

WHY NOT CT EVERYONE?

Lifetime risk of cancer death

Lifetime	500 in 2000
Brain CT in 1 year old	2 per 2000
Brain CT in 25 year old	0.2 per 2000
Brain CT in 40 year old	0.1 per 2000

IS A CT NEEDED?

	Sensitivity	Specificity	LR+	LR-
New Orleans	99 % injury 100 % surgery	5 % injury 5 % surgery	1.04 1.05	0.2 0.2
Canadian	87% injury 100 % surgery	39% injury 38 % surgery	2.2 2.6	0.33 0.03

Patients who are 16 to 65 years old and have no post-concussive symptoms except mild headache, no external signs of injury or basilar skull fracture, and a normal neurologic examination, the frequency of intracranial clots that require neurosurgery is so low (<1%) that it is reasonable to forgo CT scanning.



POST-CONCUSSION SYNDROME

Table 2. International Classification of Diseases, 10th Revision, Criteria for Postconcussion Syndrome (Code 310-2).

Interval between head trauma with loss of consciousness and development of symptoms, ≤4 wk

Symptoms in at least three of the following categories:

Headache, dizziness, fatigue, noise intolerance

Irritability, depression, anxiety, emotional lability

Subjective concentration, memory, or intellectual difficulties without neuropsychological evidence of marked impairment

Insomnia

Reduced alcohol tolerance

Preoccupation with above symptoms and fear of brain damage, with hypochondriacal concern and adoption of sick role

RETURN TO SPORT

Symptoms	First Concussion	Second Concussion
Grade 1: no loss of con- sciousness, transient confusion, resolution of symptoms and mental abnormalities in <15 min ⁺	Remove from play Examine at 5-min intervals May return to play if symptoms disappear and results of mental-function examination return to normal within 15 min	Allow return to play after 1 wk if there are no symptoms at rest or with exertion
Grade 2: as above, but with mental symptoms for >15 min	Remove from play and disallow play for rest of day Examine for signs of intracranial lesion at sidelines and obtain further examination by a trained person on same day Allow return to play after 1 wk if neurologic examination is normal	Allow return to play after 2-wk period of no symptoms at rest or with exertion Remove from play for season if imaging shows abnor- mality
Grade 3: any loss of consciousness	Perform thorough neurologic examination in hospital and obtain imaging studies when indicated Assess neurologic status daily until postconcussive symptoms resolve or stabilize Remove from play for 1 wk if loss of consciousness lasts seconds; for 2 wk if it lasts minutes; must be asymp- tomatic at rest and with exertion to return to play	Withhold from play until symptoms have been ab- sent for at least 1 mo

SPLENIC INJURY

IS ABDOMINAL IMAGING REQUIRED?

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Australian Jockeys' Memorial

WHY NOT CT EVERYONE?

Lifetime risk of cancer death

Lifetime	500 in 2000
Abdominal CT in 1 year old	4 per 2000
Abdominal CT in 25 year old	1 per 2000
Abdominal CT in 40 year old	0.2 per 2000

WHY NOT ULTRASOUND EVERYONE?

Excellent specificity (99 - 100 %)

BUT

- Poor sensitivity (40 90 %)
- Operator and patient dependent
- SPPIN not a SNNOUT
 - so SPecific that a Positive result rules an injury IN, but not so SeNtsitive that a Negative result rules an injury OUT

IF THE ABDOMINAL EXAM IS NORMAL

What is the risk of splenic injury?

Unstable	unacceptable
Unconscious	unacceptable
Long bone fracture	unacceptable
Intoxicated	2%
Rib 7 - 12 pain or tenderness	7%
Rib 7 - 12 pain or tenderness only	3 % (all pleuritic)



Head CT

LOC + mild headache

C-spine x-ray

How tender? How distracting? How dangerous?

Abdominal CT

Are the ribs fractured? Is the pain pleuritic?

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