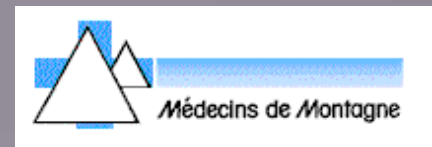


Management of head injuries in a French ski resort

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Background

- Head injuries are very common injuries in wintersports
- Each head concussion is supposed to be checked with a CT scan
- In reality it is not possible to send all head trauma to a hospital

Background

Signs of severity:

- Extreme ages: less than 1 year, more than 70 years old
- Patients with anticoagulation treatment
- High kinetic mechanism
- Repeated projectile vomiting
- Worsening headache

Method

- We use scale Master 1, 2 and 3 classification for head concussions.
- We have retrospectively analysed our management of head injuries.

On slope management

- In the case of severe symptoms ski patrol ask the doctor to come on the slopes. (by helicopter, ski doo or ski)
- The physician has to decide if the patient can be transported to the medical center at the bottom of the slopes, or if he has to fly to a hospital equipped with CT scan.

On slope management

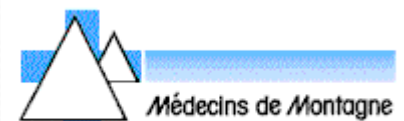
- Direct transportation to a hospital equipped with CT scan is required if the patient is Master grade 3:
 - Glasgow score under 13
 - Neurological focus signs
 - Embarrure (displaced evident skull fracture)
 - Polytrauma

On slope management

- All other cases will be transported to the local medical center in a first step including all Master 1 & 2 head injuries.

Local medical center facilities

- The local medical center is equipped with Xray, echography and rescussitation material
- Senior physicians qualified in emergency medicine are always on duty
- X ray technicians and experimeted nurses are on duty all day 7 days a week



Local medical center management

- Master 1 head injuries include:
 - scalp contusion
 - amnesia
 - short loss of consciousness
 - headache
 - vomiting
- These patients will benefit from repeated clinical evaluations before decision, no skull X ray are performed.

Local medical center management

- Master grade 1 patients will be transported after medical supervision to their local residence.
- Following tips:
 - Rest in strict decubitus for 24 hours
 - Calm rest without any noise (no TV, no headphones, no mobile)
 - Prescription with Paracetamol in case of headache
 - Medical reevaluation after 24 hours

Monitoring instructions

- Given to a parent, or a friend able to check the patient during at least 24 hours

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Avoriaz,

HEAD INJURY INSTRUCTIONS

The patient has been carefully examined and we feel that it is safe for Him/her to go home. However, you should observe him/her carefully for the next two days as some symptoms only occur after a delay of 24-48 hours. Contact the Medical Centre if any of the following occur :

- EXCESSIVE SLEEPINESS :

The injured person may be tired because of the injury which he/she has suffered, but should be easily awoken with whatever would normally rouse him from a deep sleep.

- PERSISTANT VOMITING :

Most injured people may vomit once or twice after a head injury. Call the doctor if it persists.

- IF ONE PUPIL seems larger than the other one



- If the patient has difficulty walking or moving his arms or legs
- IF HE MUMBLES OR IS UNABLE TO SPEAK COHERENTLY
- IF HE COMPLAINS OF A SEVERE HEADACHE (especially if it gets worse or if it isn't relieved by aspirin).
- If he complains of double vision or if you notice that HIS EYES ARE NOT MOVING TOGETHER.

These problems occur only very rarely after a head injury but they may be a sign of deterioration. Therefore, in order for the patient to receive the best care possible, you need to be aware of symptoms that may occur.

Local medical center management

- Master grade 2 patients include:
 - confirmed lost of consciousness
 - persisting headaches
 - recurrent vomiting
 - amnesia
 - time and space desorientation

Local medical center management

- Master grade 2 patients will be clinically evaluated during at least 2 hours before any decision is made.
- No skull X ray are performed, only cervical spine X ray are taken in case of pain after the injury in this area.
- Infusion with Paratamol is given in case of serious headaches

Local medical center management

- Decision is obvious for hospitalisation if:
 - Worsening of symptoms after free interval
 - Persisting extended amnesia after 4 hours
 - Increasing and serious headaches after 4 hours
 - Any neurological symptom occurs
 - Persistent throwing up despite drug infusion

Local medical center management

- All other cases will be treated after a period of 4 hours like Master grade 1
- Reevaluation is made every 24 hours until complete disappearance of symptoms
- Hospitalization is sometimes recommended for social reasons: teenagers without adult supervision, possible follow up complications and unreliable people

HEAD INJURY

ON SLOPE ASSESSMENT: Kinetic, helmet, constants, pupils (symmetrical, size, reactivity), capillary blood glucose, cervical collar, cranio-cervical-facial lesions, lesions associated.

No initial loss of consciousness
No amnesia
No co-morbidity
simple headache
asymptomatic

Initial loss of consciousness
amnesia
comorbidity
progressive headache
vomiting
Geographic isolation social

SEVERE:
Glasgow <13
Trauma > clavicle
Seizures?
> 70 years or <1 years
AVK
alcohol intoxication
vertigo?

Good evolution

Overseing 48H
clinostatism 24H
STRICT REST without stimulation
Advise paper
anti emetic
analgesic

Peripheral veine way
Monitoring
Overseing few hours

Worse Evolution

TDMc

HOSPITALIZATION MONITORING
Peripheral veine way,
Intubation?

Overseing

Discussion

- We have described our way to take care of head concussions in our situation, equipment and experience.
- Other way could be chosen in different situations of medical experience or equipment,
- Master grade 2 are the most problematic. The decision often depends on the early symptoms rather than on the real medical severity of the case.

Conclusions

It is very important to be able to classify head concussions in only two categories: minor and severe

It is not possible to send all head injuries to a hospital

In case of risk of severe damages, the patient has to be sent to hospitals equipped with CT scan and neurosurgical facilities



Thank you for your attention