Head Trauma Incidence, Severity and Outcome in Skiers and Snowboarders

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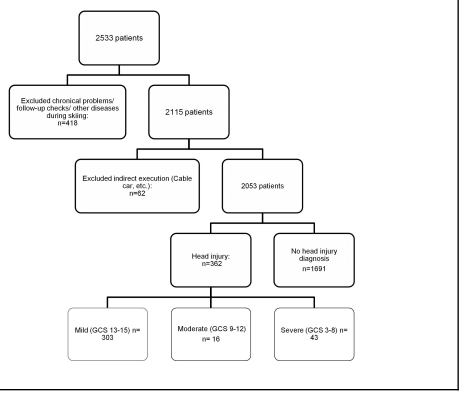
Introduction

Among all injuries sustained in skiing and snowboarding accidents, head injuries are relatively rare accounting for 3-14% of injuries (1,2). Nonetheless, head injury is a main cause of death and morbidity in skiing and snowboard accidents (3,4). Our aim was to examine differences of head injury severity, patterns of head injury, helmet efficacy and outcomes in snowboarders and skiers.

Methods

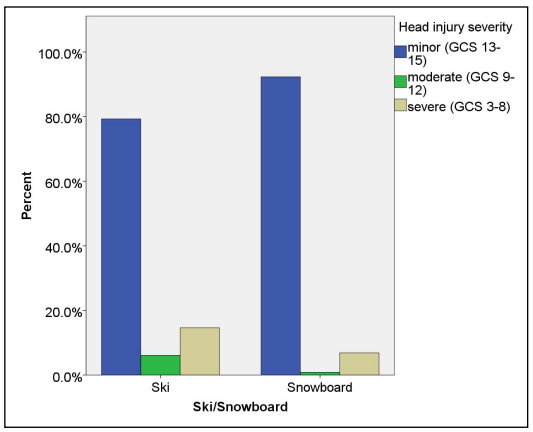
A retrospective review of all patient notes and CT-scans of patients admitted to our Level 1 Trauma centre 03/2000 - 03/2011 due to head trauma sustained from skiing and snowboard acidents. Head trauma severity was determined by the lowest documented GCS (severe <9, modest 9-12, minor 13-15). Patient outcomes were measured by the Glasgow Outcome Scale (GOS).

Inclusion flow chart

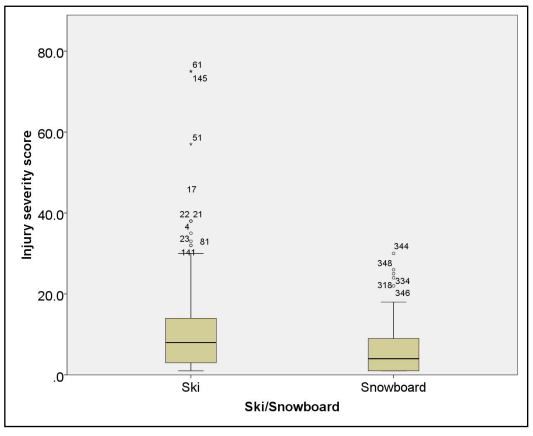


Results

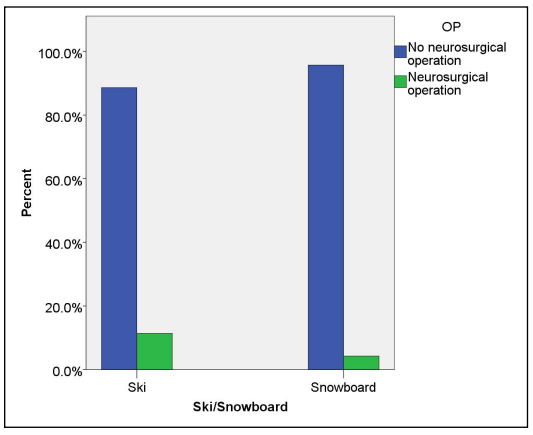
A total of 2053 patients were admitted for skiing (n=1362) and snowboarding (n=691) accidents, 362 of them for head trauma (n-snowboarders= 117 /n-skiers= 245). 52.7% of snowboarders and 51.7% of skiers wore helmets. 20% (50) of Skiers sustained moderate to severe head injuries compared to 8% (9) of snowboarders (p =0.003*).



The mean injury severity scores (ISS) of head injured snowboarders was 5.6 ±6 and of skiers 10 ±11 (p=0.001*).



Four (3.4%) snowboarders and 21 (8.5%) skiers sustained an open head injury (p=0.052). Traumatic subarachnoid hemorrhage was found in 5 (4.3%) snowboarders and 24 (10%) skiers (p=0.051). Calvarial fractures, contusion, intracerebral hemorrhage, subdural haematoma and epidural hematoma were equally prevalent in skiers and snowboarders. 28 (11.4%) skiers and 5 (4.3%) snowboarders needed neurosurgical interventions (p=0.018*).



The mean GOS of snowboarders was 4.85±0.7 and of skiers 4.75±0.9 (p=0.497). Wearing a helmet had no association with less severe head injury and outcome of skiers/snowboarders. However of both skiers and snowboarders open head injuries were less frequent in helmet wearers (2.6% vs. 9.3.%; p=0.030*).

Conclusions

Snowboarders had significantly less severe head injuries and were less likely to need neurosurgical interventions. Skiers with a head injury also had a higher overall injury severity (ISS). Helmets currently on the market proved to have some beneficial effect, however it was not detectable in the overall outcome.

Learning Objectives

- Skiers admitted for head injuries have more severe injuries than snowboarders.

- Helmets provide very limited protection in skiers and snowboarders

References

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