Serious sledding injuries in children dramatically increased during the COVID-19 pandemic.

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Short Report

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Abstract

Background

Sledding is the most popular activity in young children given its cost and simplicity.

Objective

This study aims to highlight the increase in serious sledding injuries among children in France during the COVID-19 pandemic and to examine the patterns of injury.

Methods

A single-center retrospective study. Patients younger than 16 years of age were included if they were admitted in PICU because of a sledding, skiing or snowboarding accident.

Results

Compared with previous winter seasons, sledding-related injuries increased four to five-fold during the winter of 2020–2021, with a total of 12 children admitted to the PICU. Most were less than 5 years of age. At the time of the accident, most children (9/12, 75%) were not wearing a helmet. All children presenting with a head trauma were younger than 5 years old. Finally, no patient died and the median length of stay in ICU was 3 days (IQR 1–7). Conclusion: Serious pediatric injuries related to sledding have increased sharply with the COVID-19 pandemic. There is an urgent need to develop prevention strategies, including the widespread use of helmets.

Introduction

Sledding is the most popular activity in young children given its cost and simplicity. A previous study by Maisonneuve *et al*. showed that sledding accidents result in serious injuries, especially head injuries [1]. During the COVID-19 pandemic, French ski resorts were forced to close. While ski lifts were closed, other winter activities such as cross-country skiing, ski touring, snowshoeing and sledding remained possible. This study aims to highlight the increase in serious sledding injuries among children in France during the COVID-19 pandemic and to examine the patterns of injury.

Methods

We retrospectively studied all children admitted to the pediatric intensive care unit (PICU) of the Grenoble Alpes university hospital (the only Level 1 pediatric trauma center in the French Alps) due to a winter sports-related accident over a four-winter season period (winter 2017-2018 to winter 2020-2021). Patients

younger than 16 years of age were included if they were admitted in PICU because of a sledding, skiing or snowboarding accident. We collected demographic and clinical data using 2 local databases: the TRENAU (The Northern French Alp Trauma System) database and the International Classification of Disease (CIM-10; codes W02 and ACC433) database. We used the Injury Severity score (ISS) and the Pediatric Trauma score (PTS) as severity scores. An ISS of 15 or greater and a PTS of less than 8 generally define severe trauma. The local ethics committee of the Grenoble-Alpes University Hospital and the national data protection commission (CNIL) approved the study according to MR-004 reference methodology (n°2205066v0, June 29th, 2020).

Results

During the study period, 159 patients were admitted in our PICU following a winter sport-related accident (Figure 1). Compared with previous winter seasons, sledding-related injuries increased four to five-fold during the winter of 2020-2021, with a total of 12 children admitted to the PICU. Characteristics of these patients are summarized in Table 1. Most were less than 5 years of age. At the time of the accident, most children (9/12, 75%) were not wearing a helmet. In half of the cases, the accident involved a collision with a stationary object (e.g. tree, barrier or fence). The median [IQR] ISS at admission was 11 [3–18], and one patient had an ISS greater than 15 (none with PTS < 8). Chest trauma was the most common injury observed in this series (n=4, 33%). All children presenting with a head trauma were younger than 5 years old. Finally, no patient died and the median length of stay in ICU was 3 days (IQR 1-7).

Discussion

We report in this retrospective study a significant increase in sledding-related injuries during the 2020-2021 winter season, whereas the number of snowboarding and skiing injuries decreased considerably. Although sledding is commonly considered safe and harmless, we highlighted the potential severity of sledding-related injuries in children.

Sledding accidents generally involve younger children than skiing or snowboarding accidents, and this population has a greater risk of head injury [1,2]. Young children have proportionally larger head and a higher center of gravity, placing them at high risk for head injury. In addition, sledding may have specifics that make the pediatric population more vulnerable. Sledding on slopes that are not specifically designed for sledding increases the risk of hitting a stationary object. Also, icy slopes increase the speed and severity of impact in case of a fall [3]. Despite this increased risk, helmet use in sledding is still unusual compared to skiing and snowboarding [1,4]. As evidenced for skiing and snowboarding [5], helmets probably significantly reduce the risk of head and neck injuries in children sledding. Therefore, there is an urgent need for preventive measures. Although this is a single-center retrospective study involving a limited number of children, our data appear sufficient to alert the medical community and authorities to the potential risk of sledding.

Conclusion

Serious pediatric injuries related to sledding have sharply increased in France with the COVID-19 pandemic. There is an urgent need to develop prevention strategies, including the generalization of helmet use.

References

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Table

Table 1: Characteristics of patients with sledding injuries

Variable	Total (n= 12)
Age, years, median IQR	5.5 [2.5-13]
Male, n (%)	6 (50%)
Helmet, n (%)	3 (25)
Head trauma, n (%)	3 (25%)
PTS at admission, median (IQR)	11 [8-12]
ISS at admission, median (IQR)	11 [3-18]
Median ICU length of stay, days (IQR)	3 [1-7]
Median hospital length of stay, days (IQR)	5 [2-9]
Deaths, n (%)	0 (0)

Abbreviations: ICU: Intensive Care Unit, IQR: Interquartile, ISS: Injury Severity Score, PTS: Pediatric Trauma Score

Figures

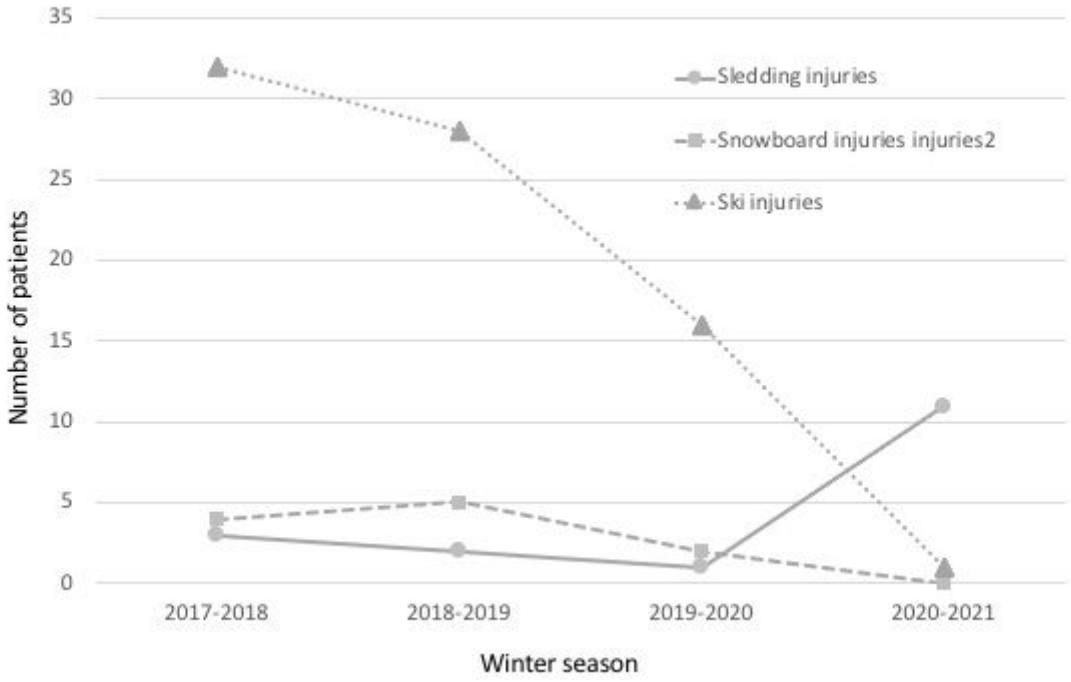

Figure 1

Winter sport injuries according to the type of activity over the last few years.