

LETTERS TO THE EDITOR

"Banana boating"

EDITOR.—We wish to report two patients who presented to our accident and emergency department having recently returned from holidays abroad, where they had partaken in "banana boating", an increasingly popular holiday activity.

Case 1

A 55 year old man who had been a passenger on a "banana boat" six days previously for approximately 30 minutes, presented with a history of weakness and swelling of both arms for three days. On examination he had gross pitting oedema of both forearms but had a full range of movements of both arms. Urinalysis and serum urea and electrolytes were normal but creatinine phosphokinase (CK) was grossly raised at 4969 IU/l, suggesting considerable muscle damage.

The patient was discharged home with physiotherapy advice, and he made an uneventful recovery.

Case 2

A 44 year old women who had been a passenger on a "banana boat" two days previously for two hours, presented with a one day history of painful swollen arms. Initially after the ride, she had experienced some tingling and numbness in both hands, which resolved after 24 hours. On examination she had generalised tenderness and noticeable swelling of both arms from the wrists to the shoulders, with limited elbow extension by 45 degrees. Urinalysis tested positive for haemoglobin and protein, and serum urea and electrolytes were within normal limits. Her CK was 9448 IU/l.

Two days later, although her CK had increased to 15 682, she had improved clinically. Her CK after a further two days was 4377 IU/l.

Discussion

"Banana boats" are large inflatable cylinders pulled behind speedboats, carrying up to eight passengers at a time. Each passenger has a "handlebar" to hold on to in front of them, which must be grasped very tightly in order for them to stay on. The excitement of the ride is heightened by increasing the speed and rate of turn of the speedboat. Rhabdomyolysis, in which muscle fibres are damaged and break down, can result from this form of unusual strenuous physical activity,¹ and was diagnosed in both these cases by the combination of the clinical findings and the raised CK levels. When localised to the arms, this can lead to compartment syndrome, a situation where the build up of pressure in the closed fascial compartments of the limbs from trauma or swelling causes an obstruction to the blood supply, and subsequent muscle death. Rhabdomyolysis in its most extreme form can cause metabolic abnormalities leading to acute renal failure and clotting disorders,^{2,3} which can prove fatal if not treated early.

The manufacturers of commercial "banana boats" recommend a maximum towing

speed of 15 miles/hour which is written on the side of the inflatable dingy, but this in practice may often be exceeded to further add to the thrill of the ride. We would suggest that passengers and operators of these craft should be made aware of the possible risks of injury if this speed is exceeded.

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- 1 O'Donnell J, Gleeson AP. Exercise-induced rhabdomyolysis. *European Journal of Emergency Medicine* 1998;5:325-6.
- 2 Knochel JP. Catastrophic medical events with exhaustive exercise: "white collar rhabdomyolysis." *Kidney Int* 1990;38:700-19.
- 3 Nimmo GR, Lambie AT, Cumming AD. Rhabdomyolysis and renal failure. *Intensive Care Medicine* 1989;15:486-7.

On the need for the rare disease assumption in some case-control studies

EDITOR.—Several case-control studies have estimated the association between wearing of a bicycle helmet and head injury due to a bicycle crash.¹ Hagel and Boivin recently argued that these studies do not need the rare disease assumption in order for us to accept the odds ratio as an estimate of the incidence rate ratio.² In support of their argument, Hagel and Boivin described a hypothetical case-control study in which the study population is thought of as people riding bicycles.² The cases were those who had a head injury after a crash. The controls were randomly sampled from all bicycle riders, regardless of whether or not they had just crashed. Such a study would seek to answer this question: if two bicycle riders, one helmeted and one not, set out on a ride, which is more likely to sustain a head injury? We agree with the contention of Hagel and Boivin that the odds ratio from such a study would estimate the incidence rate ratio, even if it were common for bicyclists to crash and sustain head injuries.

None of the published studies, however, were designed in the manner described by Hagel and Boivin. Instead, all the published studies sought to address this question: if two bicycle riders, one helmeted and one not, crash while riding a bicycle, which is more likely to sustain a head injury? They restricted both cases and controls to the population of riders who had an incident crash. A rider entered the study population at the moment a crash began. Their experience in this population ended a fraction of a second later, when they either did or did not have a head injury.

All of the published studies actually compared the head injured cases with bicycle crash victims who had an injury to a body site other than the head. As we have pointed out elsewhere, if helmet use neither increases nor decreases the risk of non-head injuries among cyclists who crash, then the helmet wearing prevalence among controls with non-head injuries should approximate the prevalence of helmet use among all cyclists who crashed and had no head injury.³ This study design compares cases with non-cases, the design that Hagel and Boivin refer to as a cumulative incidence case-control study. The odds ratio from such a study will closely approximate the relative risk of a head injury among the helmeted compared with the non-helmeted,

only if this outcome is rare. We have little doubt that head injury is rare after a bicycle crash, so we think that the published studies used a reasonable design; we just wish to point out that it was not the design described by Hagel and Boivin. For further details about the design of bicycle helmet case-control studies, with numeric examples, we refer readers elsewhere.³

One advantage of the design used by published case-control studies of bicycle helmet wearing and head injury, is that all the members of the study population had crashed. There was no need, therefore, to control for the propensity of riders to crash, which might confound a study of the type described by Hagel and Boivin.⁴

When the goal of a case-control study is to assess the effects of a protective device among persons experiencing a brief event which might result in injury, such as a bicycle crash, a car crash, or a fall, it may be useful to limit the study population to persons who experience an incident event. In such a study, the odds ratio will closely approximate the relative risk only when the outcome is uncommon.

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- 1 Thompson DC. <http://depts.washington.edu/hiprc/childinjury/>.
- 2 Hagel B, Boivin JF. Population preventable fraction of bicycle related head injuries. *Inj Prev* 2001;7:78.
- 3 Cummings P, Koepsell TD, Weiss NS. Studying injuries with case-control methods in the emergency department. *Ann Emerg Med* 1998;31:99-105.
- 4 Cummings P, Koepsell TD, Roberts I. Case-control studies in injury research. In: Rivara FP, Cummings P, Koepsell TD, et al, eds. *Injury control: a guide to research and program evaluation*. New York, NY: Cambridge University Press, 2001: 139-56.

Misuse of booster seats

EDITOR.—In a further review of the data presented in our paper, published last December,¹ it has been concluded that the overall misuse rate of booster seats was mis-reported as being 56%. The correct overall misuse rate of booster seats in this study was 32%.

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- 1 Morris SD, Arbogast KB, Durbin DR, et al. Misuse of booster seats. *Inj Prev* 2000;6:281-4.

CALENDAR

Mobilizing for a SafeUSA

3-5 December, 2001, Atlanta, GA, USA. A leadership conference to reduce violence and injury in America. The goal of the conference

is to mobilize the leadership of the violence and injury prevention and control community, including researchers and practitioners from diverse fields to create a climate and opportunity for participants to exchange ideas and improve collaboration, enhance skills and effectiveness of practitioners and researchers, identify emerging trends and gaps in safety research and programs, identify and disseminate best practices in injury and violence prevention and control, attract new partners for the SafeUSA alliance, and develop strategic recommendations to advance a national SafeUSA agenda. SafeUSA is an alliance of organizations dedicated to eliminating unintentional and violent injury and death in America. *Further information:* SafeUSA, PO Box 8189, Silver Spring, MD 20907-8189, USA (tel: +1 888 252 7751, email: sainfo@cdc.gov, web site: www.cdc.gov/safeusa).

The Fifth International Conference on Fatigue in Transportation. Coping with the 24 hour society

11-15 March 2002, Fremantle, WA, Australia. The conference is on non-prescriptive approaches to managing fatigue in transportation. *Further information and abstracts* (by 1

February 2002): Laurence Hartley, Conference Convenor, Institute for Research in Safety & Transport, Psychology, Murdoch University, Western Australia 6150 (fax: +61 8 9360 6492, email: hartley@socs.murdoch.edu.au).

4th Fourth International Symposium on Safety in Ice Hockey

5-6 May 2002, Pittsburgh, PA, USA. The objective of the symposium is to review the current state of the art and science of prevention of ice hockey injuries. One session will be devoted to in-line or roller hockey injuries. The meeting will cover new and old protective equipment, coaching techniques to decrease the risk for injuries, playing rule changes to decrease the risk for injuries; and awareness programs for players, parents, coaches, referees, and administrators. *Further information:* Symposium Co-Chairmen: Alan B Ashare, St Elizabeth's Medical Center, Boston, MA, USA (tel: +1 617 789 2828, email: aashare@semc.org) and David J Pearsall, McGill University, Montreal, Quebec, Canada (tel: +1 514 398 4184, ext 0488, email: david.pearsall@mcgill.ca).

11th International Conference on Safe Communities

7-9 May 2002, Rainy River Valley, Ontario, Canada. *Further information:* www.who2002.com.

6th World Conference on Injury Prevention and Control

12-15 May 2002, Montreal, PQ, Canada. The theme is "Injuries, Suicide and Violence: Building Knowledge, Policies and Strategies to Promote a Safer World". *Further information:* www.trauma2002.com (tel: +1 514 848 1133, fax: +1 514 288 6469).

World Congress on Drowning

26-28 June 2002, Amsterdam, The Netherlands. The congress will seek to reduce drowning throughout the world by creating a forum for prevention, treatment, and rescue. *Further information:* Congress Secretariat, World Congress on Drowning 2002, Consumer Safety Institute, PO Box 75 169, 1070 Amsterdam, The Netherlands (fax: +31 20 511 4510, email: secretariat@drowning.nl, web site: www.drowning.nl).

Editorial Board Member: brief biography

DANILO BLANK

Danilo Blank is a professor of pediatrics at the Universidade Federal do Rio Grande do Sul (UFRGS) School of Medicine, in southern Brazil, acting chiefly as senior attending at the outpatient department, and his main teaching activity being in the field of health promotion. A long time enthusiast of injury control, he published his first article on the role of the pediatrician in child and adolescent safety promotion in 1980. He is a founding member of the Committee on Accident Prevention of the Society of Pediatrics of Rio Grande do Sul, which he chaired from 1986 to 1992. The new committee's diligent work led to the organization of the First Latin American Congress on Accidents in Children, held in Porto Alegre, in 1988. In 1992, Dr Blank was appointed as the chairman of the Committee on Child and Adolescent Safety of the Brazilian Society of Pediatrics. Two of his main achievements during that period were the editing of the *Handbook on Accidents and Poisonings in Childhood and Adolescence*, and the production of the video "Protection, an act of love", directed to the lay public and presented at the Second World Conference on Injury Control. From then on, he has authored many textbook chapters on safety promotion. Since 1995, Dr Blank is the executive editor of *Jornal de Pediatria*, the official scientific publication of the Brazilian Society of Pediatrics, and upon the recent launching of the journal's web site he presently serves as web editor.

