Does Second Impact Syndrome Exist?

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Abstract Stocol larger sphere (CSI) is a videly larger in the stoch jarger in the stoch jarger in the stoch jarger in the stoch in the stoch integrated on the stoch in the stoch integrated on the

INTRODUCTION
In the United States, belief in the so-called "second procession of the International States and the International States and the International States and International International States and International International Internatio

reasonau examisem animatoni. Mitte there is no douter physicians have beginn to raise concerns over the wide-spread belief in this syndrome, given the high incidence of concussion in most collision sports and the scarcity of a risk factor for this condition is disputed. This point is rificial for team physicians because it is the fear of this strength of the published SIS cases.^{11,19}

s the tear of this nes regarding re- EVIDENCE AGAINST THE EXISTENCE OF SIS entity that underpins concussion guidelin urn to sport.^{4,19}

entity that undergine coencision pinklines regarding re- **DACKGROUTS EVIDENCE**. (AAANST THE EXISTENCE OF SSE **CONTROL CONTROL CO** lowing brain injury. It is construct to a second termed "malignant brain edema.¹⁵ SIS is said to share a similar pathology to this phe-nomenon differing only in the risk factor of repeated concussive injury. If SIS represents a real clinicopathon

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 Bock, Dentation of orogoning symptoms following the
 initial impact up to the time of the second impact

SECOND IMPACT SYNDROME

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agnostic criteria were defined by the authors based on the clinicopathophysiological features and temporal profile of SIS. These criteria were:

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mately 30% of the cases were female.^{2,2,2,2,3,3,3,4,5,4} Once again, given that motor vehicle accidents, gunshot trauma, and sport injury are the major patient sources, it is not supersing that makes predominate. There is how-ver some indirect evidence to suggest that female sex hormones may pluy a role in memory function postin-iury.² Mitchier a true sex difference exists in terms of extended accessors to traumar remain usnoblanized at

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From the discussion above, we recognize an extremely rare catastrophic complication of single brain impact, namely diffuse cerebral welling. This entity is typically but not exclusively associated with structural brain injury (e.g., cerebral containsion or subdard hematoma) and is more common in children and adolescents. Recames are autometed by any involve disconfered cerebral vascular



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In the 32-year time frame of the study, a total of 25 layer deaths were identified. Nine were due to neuro-<text><text><section-header><section-header><text><text><text>

head injury represent approximately 15% of all patients sustaining severe head injuries. Intra-nrain heatmoona is the cause of this syndrome in approximately 75% of these patients?³³⁴ In some cases, bernatornas are evi-dent on initial imaging studies, but in other cases, hema-tomas develop after a delay.³³⁴ There is a smaller sub-group of patients who deteriorate due to causes other

The Pathophysiology of Posttraumatic Brain Swelling Posttraumatic cerebral swelling may be due to two The Strength of the second sec

P. McCRORY

central basis of this conductor rests on the verification of this particular appet of the polibidic cases. It is assumed that order team players' recall of head injury events in user a circumsteen will be reliable. The dangers of this form of removecine case accentainment bload he ob-tained the second second second second second second transfer and the second second second second second using teammatic recalled injury. In construct to the view that SIS probably does not exist, or at behas been over-diagnosit, there has been suggestion that the trarity of this condition does not re-flect its true includes with cases programmented.

group of patients who deteriorate due to causes other than mass lesions who have evidence of posttraumatic diffuse cerebral swelling. It is important to note that cerebral swelling may occur with or without structural brain injury.³⁶ and that dete-rioration may be rapid following an acute injury.³⁶

ported in boxers should be made. With the propensity to numerous head impacts during a single bout, it makes it very difficult to determine what is in fact a "first" or "second" impact. Some published cases suggest that both may occur during the course of a single bout,¹ Should these cases be included with other sports? If SIS is a real

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Beet ins true insidence with cases going surported,²⁰ This seems implemently income the proceeding of the inchildren and adolescents are likely to be investigated and/or be the subject of occuration liquests. Given this can assume that stimulibra liquest. Given this can assume that stimulibra liquest income and be dominated on the stimulibra liquest and the state of the state of the structure of the sign starticipation rate for this spot and a concussive injury rate that is approximately eight times than of American football. Risk Factors for Cerebral Swelling in Sports Are boxers at greater risk? Particular note of the cases of cerebral swelling re-ported in boxers should be made. With the propensity to

entity, the repetitive head impacts in boxing should make boxers much more likely to suffer from this entity. Box ers do suffer more frequently from other forms of cata-