
“The Show Must Go On”

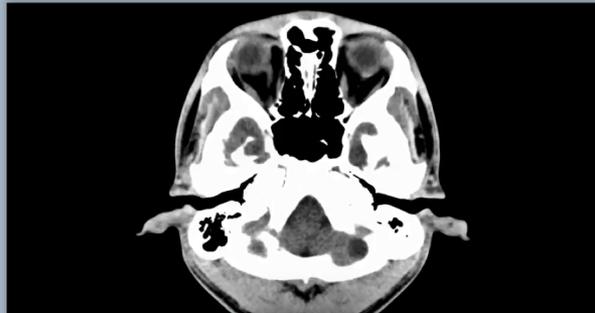
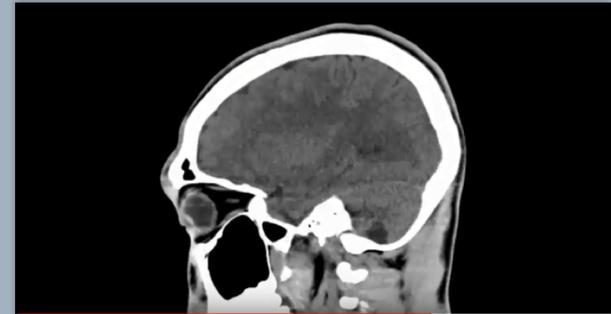
Intracranial Cysts

Warren Wang MD
2018 ARP ANNUAL CONFERENCE
Oct. 28th, 2018 Harrah's Casino and Hotel

Pre-bout history

- 26 y/o healthy athletic Thai male
 - Professional MMA athlete (record 7-4)
 - No previous injuries, never been KO'd
 - All medicals turned in were normal
 - Physical exam: unremarkable
 - Neuro/cognitive Exam: unremarkable
 - Labs: normal
 - Eye exam: normal (VA, pupil, EOM, Fundus)
 - Brain CT: left cerebellum 1x1cm cyst-like lesion
-

Images



Radiologist report:
a round cystic like 1x1cm lesion in the left cerebellum was interpreted

Should he compete?

- No neurological symptoms
- Neuro/cognitive function scores similar to previous exams
- Intracranial 1x1cm cystic-like lesion

Decision:

Athlete was allowed to compete.

Suspension: require a medical clearance letter from a neurologist for his next bout.

Post bout clearance

Reason: N/A

HISTORY: A case of 26 year-old man with left cerebellar cyst. To follow up.

UNENHANCED MDCT SCAN OF THE BRAIN
COMPARISON : Prior MRI study from outside hospital on Nov 22, 2016.

FINDINGS:
The study reveals no significant change of a 1.0x1.1 cm well defined round-shaped cystic lesion at inferior aspect of left cerebellar hemisphere.
The rest of brain parenchyma shows normal attenuation.
There is no midline shift.
The ventricular system and CSF cisterns are within normal limits.
There is mucus retention cyst in right maxillary sinus.
Mild mucoperiosteal thickening in left maxillary sinus and left anterior ethmoid sinus are seen. The rest of visualized paranasal sinuses and mastoid air cells are clear.
Bony structures are unremarkable.

IMPRESSION:
- Stable size of a 1.0x1.1 cm well defined round-shaped cystic lesion at inferior aspect of left cerebellar hemisphere.
- Mild mucoperiosteal thickening in left maxillary sinus and left anterior ethmoid sinus.

[Redacted] M.D. Resident
[Redacted] ng, M.D. Radiologist

King Chulalongkorn Memorial Hospital
1873 Rama IV Road Pathumwan Bangkok, Thailand 10330

Vol 299 Medical Certificate No 14919

I, Dr [Redacted] 1 August 2018
have examined Mr./Mrs./Miss [Redacted] Medical license No 19527
aged 26 years old.
Date examined 1 August 2018 at (time)
Hospital No. (HN) 73959/59 Admission No.(AN)
Findings Patient was found to have a symptomatic cerebellar cyst on routine medical check up since 3 MAR 2016. The cyst has been demonstrated by serial imaging to be stable in size up to 26 Jul 2018.
Diagnosis Cerebellar cyst, stable, asymptomatic
Recommendation Patient can participate in sporting activities with no restriction.
[Redacted]

Should he continue to compete?

□ Literature reviews

JNS PEDIATRICS CLINICAL ARTICLE
J Neurosurg Pediatr 17:410-417, 2016

Sports participation with arachnoid cysts

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OBJECTIVE There is currently no consensus on the safety of sports participation for patients with an intracranial arachnoid cyst (AC). The authors' goal was to define the risk of sports participation for children with this imaging finding.

METHODS A survey was prospectively administered to 185 patients with ACs during a 46-month period at a single institution. Cyst size and location, treatment, sports participation, and any injuries were recorded. Eighty patients completed at least 1 subsequent survey following their initial entry into the registry, and these patients were included in a prospective registry with a mean prospective follow-up interval of 15.9 ± 8.8 months.

RESULTS A total 112 patients with ACs participated in 261 sports for a cumulative duration of 4410 months or 1470 seasons. Of these, 94 patients participated in 190 contact sports for a cumulative duration of 2818 months or 939 seasons. There were no serious or catastrophic neurological injuries. Two patients presented with symptomatic subdural hygromas following minor sports injuries. In the prospective cohort, there were no neurological injuries.

CONCLUSIONS Permanent or catastrophic neurological injuries are very unusual in AC patients who participate in athletic activities. In most cases, sports participation by these patients is safe.

 **Arachnoid Cysts**
Clinical and Surgical Management
2018, Pages 285-296



Chapter 20 - Arachnoid Cysts and Risk of Sport-Related Brain Injury

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Available online 29 September 2017.

[Show less](#)

<https://doi.org/10.1016/B978-0-12-814378-0.00020-0> [Get rights and content](#)

Abstract

Sport-related concussion has emerged as a major public health problem. Furthermore, incidental arachnoid cysts (ACs) are commonly discovered due to increased use of neuroimaging. Neurologists, neurosurgeons, and sports medicine physicians are faced with the difficult task of counseling athletes with ACs about the risks of brain injury in sport, including functional concussive injuries and structural injuries, such as subdural hemorrhage, intracystic hemorrhage, or subdural hygroma. Given the uncertainties regarding the risk of functional and structural brain injuries in athletes with an ACs, we sought to answer the following three questions: (1) Do athletes with an AC have a higher rate of concussion or structural brain injury? (2) Is it safe for athletes with an AC to participate in athletics? (3) If a structural brain injury does occur in an athlete with an AC, what is the clinical course? A review of the literature revealed Level IV and V evidence that athletes with an AC may be at a slightly heightened risk of structural brain injury. Combining the literature with our anecdotal experience, we believe it is safe for athletes with an AC to participate in athletics. Despite significant risk of publication bias and the evidence based on only case reports and case series, it appears athletes with an AC who suffer a structural brain injury have a good clinical course following neurosurgical treatment.

Children With Arachnoid Cysts Who Sustain Blunt Head Trauma: Injury Mechanisms and Outcomes

Alexander J. Rogers MD  Nathan Kuppermann MD, MPH, Angela E. Thelen, Rachel M. Stanley MD, Cormac O. Maher MD

First published: 04 January 2016 | <https://doi.org/10.1111/acem.12887>

Objectives

Arachnoid cysts are abnormal intracranial fluid collections, and there is concern that these cysts may bleed or rupture following blunt head trauma. Our objective was to determine the risk of cyst-related complications in a cohort of children with arachnoid cysts who were evaluated for head trauma.

Methods

We analyzed the Pediatric Emergency Care Applied Research Network (PECARN) head trauma public use data set, which was the product of a study that enrolled children with blunt head trauma from June 2004 to September 2006. We identified children with arachnoid cysts on cranial computed tomography (CT) and described the patient demographics, mechanisms of injury, clinical presentations, CT evidence of traumatic brain injury (TBI), and clinical outcomes. Clinically important TBI was defined as TBI leading to: 1) death from TBI, 2) neurosurgical intervention, 3) intubation for > 24 hours for the TBI, or 4) hospitalization for 2 or more nights for the head injury in association with TBI on CT.

Results

Data were available for 43,399 children who sustained blunt head trauma, of whom 15,899 had cranial CT scans obtained and 68 (0.4%) had arachnoid cysts. Falls were the most common mechanisms of injury (47%) and 87% of children had either moderate or severe injury mechanisms. Glasgow Coma Scale (GCS) scores ranged from 6 to 15, with 61 (90%) having GCS scores of 15. Two of the children with arachnoid cysts had TBIs on CT, one of which was clinically important. There were no identified cases of arachnoid cyst-related bleeding or complications.

Conclusions

In this cohort of 68 children with arachnoid cysts who sustained head trauma, none demonstrated cyst-related bleeding or complications. This suggests the risk of arachnoid cyst-related complications in children following blunt head trauma is low and evaluation should align with existing clinical decision rules.

On the other hand...

The **Physician and Sportsmedicine**

Phys Sportsmed, 2015; Early Online: 1–8
DOI: 10.1080/00913847.2015.1081551

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CLINICAL FEATURE
PERSPECTIVE

Determining brain fitness to fight: Has the time come?

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Abstract
Professional boxing is associated with a risk of chronic neurological injury, with up to 20–50% of former boxers exhibiting symptoms of chronic brain injury. Chronic traumatic brain injury encompasses a spectrum of disorders that are associated with long-term consequences of brain injury and remains the most difficult safety challenge in modern-day boxing. Despite these concerns, traditional guidelines used for return to sport participation after concussion are inconsistently applied in boxing. Furthermore, few athletic commissions require either formal consultation with a neurological specialist (i.e. neurologist, neurosurgeon, or neuropsychologist) or formal neuropsychological testing prior to return to fight. In order to protect the health of boxers and maintain the long-term viability of a sport associated with exposure to repetitive head trauma, we propose a set of specific requirements for brain safety that all state athletic commissions would implement.

Keywords:
Concussion, traumatic brain injury, dementia, boxing, return to play

History
Received 21 May 2015
Accepted 6 August 2015
Published online 21 August 2015

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“These sequences are useful in detecting vasculature and other structural lesions or anomalies that **should preclude further participation in competitive boxing including: large arachnoid cyst**; arteriovenous malformation; intracranial aneurysm; evidence of underlying hydrocephalus; symptomatic Chiari-I malformation; evidence of subdural hematoma or previous intracranial hemorrhage. “

Final Decision

- Literature research
- Expert suggestions
- Company Discussions

Athlete is released from his contract
