



CNU Pediatric Society Newsletter

"A child must know he is a miracle. Since the beginning of the world there hasn't been and until the end of the world there will not be another child like him"

- Pablo Casais

First Edition



Kirsten Lung, M1

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Sources:

1: Bieniek KF, Ross OA, Cormier KA, et al. (2015). "Chronic traumatic encephalopathy pathology in a neurodegenerative disorders brain bank." *Acta Neuropathologica*. 130(6): 877-89.

2: Stamm JM, Koerte IK, Muehlmann M, et al. (2015). "Age at First Exposure to Football Is Associated with Altered Corpus Callosum White Matter Microstructure in Former Professional Football Players." *J Neurotrauma*. 32(22): 1768-76.

Should Parents Allow Their Child to Play Competitive Sports?

By: Kirsten Lung

Occasional bumps and bruises are expected when children and teens play sports. With the continually increasing participation in competitive youth sports, the number of sports-related injuries is immense. In the U.S. alone, an estimated 30 million children and teens participate in organized sports, with more than 3.5 million sports-related injuries occurring per year. While some sports are inherently more dangerous than others, such as contact sports like football, all sports carry the potential for injury caused by either traumatic contact with other players or from overuse or misuse of a body part. According to the National SAFE KIDS Campaign and the American Academy of Pediatrics, although death from a sports

Special thanks to Brian
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injury is not common, the primary cause of death from sports-related trauma is a brain injury. Sports and recreational activities account for approximately 21% of all traumatic brain injuries among children in the U.S., and in 2012, over 1.35 million children were seen in hospital emergency rooms due to sports-related injuries; of these injuries, 160,000 were of the concussion variety. However, it is critical to note that this figure does not reflect injuries treated through different avenues – by a primary care physician, urgent care centers, or no treatment at all.

The subject of sports-related injuries has dominated media as evidenced in the widespread coverage of chronic traumatic encephalopathy (CTE) in the NFL and in the 2015 film *Concussion*. This attention has spilled into the topic of risks of developing CTE from playing competitive youth sports. Chronic traumatic encephalopathy is a progressive degenerative disease that affects the brain of individuals who have suffered repeated concussions and traumatic impacts to the cranium. The brain of an individual with CTE gradually atrophies and some regions of the cerebrum begin to accumulate tau protein, thus interfering with neuronal function. In a recent Mayo Clinic study¹, researchers have found that roughly 32% of males who participated in youth contact sports – football, wrestling, and basketball among others – had evidence of CTE. Furthermore, Stamm et al.² showed that the age at first exposure to repetitive head impacts in youth football players is associated with altered corpus callosum white matter microstructure in former professional football players. Results suggest that exposure to repeated head trauma during the critical neurodevelopmental period prior to age 12 may lead to disruption of neurodevelopmental processes, such as myelination. This results in altered corpus callosum microstructure, as well as possibly leading to future mood, behavioral, and cognitive impairments.

Despite the attention sports-related trauma has garnered, little emphasis is placed on the unfortunate fact that is often underreported by both young athletes and their parents. More often than not, competitive young athletes are driven to “stay in the game” and to “tough it out,” hence enhancing the potential long-term effects of such injuries. Appropriate management and understanding are essential in order to reduce the risk of injuries and long-term complications associated with those injuries. For children, concussion symptoms, such as headaches and blurred

vision, may interfere with school, social and family relationships. In many cases, the young athlete is compelled to proceed ahead, either because of his or her competitive instinct or through peer pressure. In such instances, it is paramount for parents, coaches and teammates to understand and to remind themselves that the spirit of the athlete is one of sportsmanship without compromising one's well-being.

A big step in preventing sports-related injuries comes in the form of education. While learning the sport itself, athletes should also learn the skills required to help prevent these injuries. This includes stretching and warmup exercises before playing, learning methods to mitigate injuries, such as proper tackle and fall techniques, or even something as simple as staying hydrated. Though injury prevention, recognition and education are important, along with proper sporting equipment, it is virtually impossible to completely eliminate the risk of injuries among athletes.

Our concerns regarding sports-related injuries and its risks will continue to grow, but it must be accompanied with an increasing level of understanding, both from the perspectives of the young athlete and that of the physician. Legislators, parents, and community sports organizations have networked together to develop safe practices in the form of rules and guidelines. Public demands for increased safety and education will continue to escalate and it will be up to the medical and athletic institutions to satisfy this growing need. In particular, the challenges of injury mitigation without compromising the sport is an issue that has to be understood and fully shared by athletic directors, parents, educators, and health care professionals.

A Clinical Case of Absence Seizures

Observed by: Christopher Phillips

During the year before I started medical school, I had the opportunity to shadow and be mentored by physicians and residents in the UCSF Fresno pediatrics program. As a part of the



Christopher Phillips, M1

1. Daroff RB, Fenichel GM, Jankovic J, Mazziotta JC, eds. Bradley's Neurology in Clinical Practice. 6th ed. Philadelphia, PA: Elsevier Saunders; 2012:chap 67.
2. Marcdante KJ, Kliegman RM. Nelson Essentials of Pediatrics. 7th ed. Philadelphia, PA: Elsevier Saunders; 2015:chap 181.
3. Goldman L, Schafer AI, eds. Goldman's Cecil Medicine. 25th ed. Philadelphia, PA: Elsevier Saunders; 2016:chap 403.

program, the residents are trained in hospital and clinical pediatric rotations. Beginning from the very first year (called “post-graduation year 1” or “PGY-1”), residents rotate in NICU, PICU, emergency room, newborn nursery, and other subspecialties at Community Regional Medical Center (CRMC) and Children’s Hospital of Central California (CHCC). Along with the rotations in the hospitals, the residents are trained in the Community Medical Center’s ambulatory pediatric clinic.

I spent most of my time shadowing the residents at the clinic where I saw complaints like skin rashes, nutrition problems, colds, fevers, and coughs. However, on one day a patient came in with an abnormal presentation that surprised the resident that I was shadowing for the day. Per routine, the resident got the patient history, did a physical exam, and provided the patient with the necessary preventative health care, or in other words “ouchy shots.” During this quick visit the patient’s mother told the resident that the child was doing great except for some attention issues which were beginning to interfere with the child’s performance in school. The issues had been going on for quite some time and the parent and teachers did not know what to do. The resident presented the case to the attending physician and reported that the parent was willing to do whatever was necessary to help her child.

That’s when it happened. As soon as the attending entered the room the mother exclaimed, “There! She’s doing it right now.” When I looked at the patient, I saw her staring straight ahead without turning her head to acknowledge the physician that had just entered the room. Furthermore, the patient did not respond to the physician asking if she was okay. She just continued to stare straight ahead. After a little while she finally snapped out of it to find us all with confused looks on our faces. When asked about the “staring” episode, she responded that she didn’t remember what had happened. The physician asked a few follow-up questions to the girl and her mother and finally explained what neither the little girl, the parent, nor I realized was going on.

What the girl had experienced was a type of seizure called an “absence seizure.” Although seizures are very common, especially in children, they are often poorly understood and can frighten parents and caretakers. A seizure occurs when the brain functions

abnormally resulting in impaired movement, attention, or level of awareness. They can be classified as either partial seizures which are localized to a certain part of the brain or generalized seizures which are diffuse or widespread. The most common type of seizure in children are febrile seizures that can be caused by ear infections, colds, or chickenpox accompanied by a fever.

The attending physician explained to the patient and her mother, that what may be confused for daydreaming or not paying attention was actually a real medical condition that was originating in the patient's brain. The patient was having a type of seizure that was described as early as 1705, but wasn't really understood until 1935 when Lennox linked this condition of impaired consciousness in association with 3-Hz wave spikes on electroencephalograms (EEGs). These types of seizures can be very difficult to diagnose – especially in the case of simple absence seizures in which the episode lasts for only around 10 seconds or less. Many children can go without being properly diagnosed for years. Although it doesn't appear that drug efficacy is worse in treatment delay, the prophylactic benefit of seizure treatment is delayed for every patient that does not get quickly diagnosed by doctor.

Whatever the barriers may be that cause patients to delay coming in to see a primary care or emergency medicine physician, these are especially important to overcome for our pediatric patients. Delaying the start of treatment and lack of continued care by a primary care physician are obstacles that we need to remove so that we are better able to provide the children in our communities with better health now and better outcomes for their futures.



Floyd Culler, M.D.

Drs. Khaira's & Culler's Corner

There is No Crying in Baseball But There Is A Lot in Pediatrics

Floyd Culler, M.D.

Spring (neurology and baseball) training is in full swing. While there is no crying in baseball, there is a lot in the lives of newborn babies. According to the iconic developmental pediatrician T. Berry Brazelton (Pediatrics 1962), infants in the first 12 weeks of life cry an average of 2 and ¼ hours per day! This article will give

an overview of what student physicians and pediatricians should know about the innately human act of crying, covering how and why we weep, and touching on what excessive crying might mean in the homes of newborn infants.

Crying is defined as the shedding of tears in response to an emotional state (Wikipedia upload 2016). Humans are believed to be the only creatures whose tears can be accessed by their feelings (M Langseth 2006, M Trimble 2013). Because emotional movement is considered fundamental to our humanity, the fact that crying and tears act to promote social bonding and enable emotional connection is important. More functionally, because human babies are born unequipped to survive on their own, they need a signal such as crying and tears to attract others for life sustaining help and support.

Tears come from the lacrimal gland above the eye. This gland is controlled by nerves originating in the hippocampus and amygdala. These brain areas encode, store and retrieve information termed episodic autobiographical memories (EAM's). These EAM's are the substance of attentional and social processing (HT Markowitsch 2010, MA Kheirbek 2011). Attention is the ability to hone in on some stimuli while ignoring others, and social processing is the general evaluation of facies. Clearly, the brain is the machinery that enables human meaning (see wonderful book by neurosurgeon P Kalanithi 2015).

Tears contain water, proteins, mucous, hormones and oils. Not all tears are of the emotional variety. In fact, there are three type of tears. Omnipresent basal tears keep the eyes moist and drain through the nose (5-10 oz per day). Reflex tears protect the eyes from irritants. Reflex tears are waterier and are released in response to pain or irritation of the cornea. The third type of tears, emotional tears, are much more proteinaceous. This makes them bead up and become more easily visible by others. Emotional tears also contain ACTH, prolactin and endorphins (leucine encephalin). These substances reflect the endocrine system's recent efforts to assist with physical stress, reduce pain and enable breast feeding (T Lutz 1999).

The reasons for crying change and expand greatly from infancy to adulthood. In early infancy, we cry simply to have our needs met. But by age 12 weeks, most babies begin to alter the pitch, intensity

and length of their crying, and this more varied expression seems to offer alternative ways to attract attention (TB Brazelton 1985, PS Zeskind 1992). Amounts of crying decrease in childhood and remain relatively equal in boys and girls until adolescence. However, during adolescence and as adults females do 4 times more crying than males (JP Flintoff 2003). Adults cry for many reasons. These are reviewed in the interesting book *Crying – The Natural and Cultural History of Tears* by Tom Lutz (WW Norton and Co 1999). Some common reasons for crying include sadness, hurt, melting at a moment of beauty, frustration, release of stress or to feel better, survival, winning support, to get what you want (manipulative), and for shifting the intimacy of the environment. There are many nuances as well.

Some common clinical problems such as infantile colic and post partum depression feature crying as main symptoms. Post partum depression will be covered more completely later by Dr. Haesslein in our GYN course, but this type of depression is a common concern in many women and some men with post partum symptoms of sadness, low energy and crying. Post partum depression needs attention, may need medical treatment and is considered a possible risk factor for child abuse.

Discussion of infantile colic, a classic pediatric crying condition, also features crying as a primary symptom. Colic is described as the sudden onset of high pitched crying for more than 3 hours per day on 3 or more days per week from age 3 weeks to 13 months (Wessel 1954). During this crying, the child appears rigid, fists clenched, legs bent with stomach hard. Colic is considered to be idiopathic as very few patients (<5%) are found to have organic cause or long term problems (RG Barr 2002). If an associated pathologic diagnosis is given, it is usually GERD. Colic is associated with secondary consequences such as frequent doctor visits, relationship stress between parents, and increased incidence of child abuse including shaken baby syndrome (JA Grimes 2014). AAP guidelines for dealing with colic suggest that parents try methods of comfort including - cuddle bare skin to skin on chest, carry in a sling, feed, burp, change, rock, play background white noise, swaddle or give a warm bath. If crying persists more than 20 minutes - change locations, assess and control your own emotional state and ask for help (pediatricians should counsel re prevention of child abuse). Finally, if distraught, frazzled and downtrodden

parents ask my advice regarding their colicky child's persistent loud protests, I first reassure them of the child's likely good overall health and of the fact that the crying usually slows at age 1 year. Then I add, regarding the long term, that they have apparently given birth to a lawyer.

Mission Statement:

“To cultivate interest, provide networking, promote community outreach, and prepare students for pediatric residency training.”