CHIARI MALFORMATION IN A FEMALE ADOLESCENT COMPETITIVE SOCCER PLAYER

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**Background:** Athlete is a 16 year old female, sophomore in high school, year round competitive soccer player. Athlete has no family or prior history of anatomical brain, brain stem, or spinal cord abnormalities or disorders. She was diagnosed with seven concussions between 2001 and 2005. Beginning in 2001, the athlete was diagnosed with her first concussion, which was unrelated to soccer. A friend slammed her head in a door, which resulted in her falling on floor, striking her head again and losing consciousness. The athlete’s pediatrician diagnosed her with two concussions from the event. She eventually became asymptomatic. From this point on, the athlete had three more soccer related concussions which were each diagnosed by a family doctor. The doctor did not elaborate on a grading scale and simply advised the athlete not to play soccer for two weeks per concussive event. Each concussion resulted in headache and dizziness but resolved asymptotically. Current symptoms began at the age of 14. In the winter of 2004, the athlete was sustained another concussion. Symptoms prompted a follow up with her family physician and a positive axial compression test warranted further care. Results from the x-ray prompted referral to a neurologist. One month restriction from all activity was ordered. Exactly one year later, during an indoor soccer game in 2005, the athlete was struck in her head with a soccer ball, which forced her head into the glass. Symptoms after this incident included constant headaches, dizziness and tingling. The follow up with her family physician again resulted in pain upon axial compression. An MRI was ordered as well as another visit with a neurologist. Athlete complains of headaches, extremity numbness (specifically hands, hips and ankles), dizziness and blurry vision currently. Symptoms begin with the first activity of the day. Headaches begin in the sub occipital region and move up the side of her head to the vertex as they worsen. **Differential Diagnosis:** Initially, the athlete was thought to suffer from post concussive syndrome due to the number of concussions suffered as well as symptoms experienced. Chronic migraines were also considered. Initial visit with the neurologist included an EEG which was negative. CAT scan with and without contrast was ordered and revealed nothing. MRI revealed low lying cerebral tonsils in February 2005. Second MRI in March 2006 diagnosed her with Chiari 1 Malformation. Type 1 Chiari Malformation is a congenital birth defect in which the cerebellar tonsils sit lower which causes the cerebellum to become herniated through the foramen magnum. This results in the brain stem being compressed causing a variety of symptoms, many of which our athlete presented with. Physical therapy was recommended. She attended regularly for a few months, with some improvement, but it doesn’t help now. Athlete now takes OTC medication for pain control and is eligible for and considering surgical repair this summer. She continues to struggle with constant headaches, extremity numbness and tingling, muscle weakness, and blurry vision. Due to current medical condition, this previously straight ‘A’ student now struggles with academic work as well. **Uniqueness:** Type 1 Chiari Malformation is not often seen in athletics. The signs and symptoms of the athlete all pointed to post- concussive
syndrome, especially the mechanism and number of previous concussions. Type 1 Chiari Malformation mostly goes undetected until the person is in a traumatic accident which brings on the symptoms. **Conclusions:** In this case, multiple concussions made her asymptomatic Chiari Malformation become symptomatic. This young lady went from a competitive young athlete to a teenager whose condition affects every aspect of her daily life, including minimal participation in gym class.