

DIAGNOSTIC IMAGING FOR INJURED CHILDREN

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Much has been printed about the ongoing damage to NFL players who bash their heads on each other or on the ground. The NFL's immediate and long term problem is huge, especially since brain damage has been shown to be still there when the next NFL season rolls around. However, the NFL is for another time. This is about our injured kids in sports, play, or other, their extreme vulnerability to diagnostic ionizing radiation, and important alternative diagnostic choices.

KID'S SPORT INJURIES

Football leads the pack for brain injuries at 29.1%, followed by soccer (16.5%) and basketball (15.4%). Among those who needed to be admitted to hospital, football is reported to be the most frequent culprit, followed by skateboarding, rollerblading, baseball and softball. Dr. Al-Chaderchi, a Pediatrician, notes that gymnastics has been a major cause of brain injury in females.

In Canada, ice hockey comprises 44.3% of all sports-related injuries among Canadian children and teenagers. Most of the injuries (nearly 70%) affect children over ten years of age who are banged into boards or have hard player-to-player contact. Their study of skiers and snowboarders found a worldwide increase in spinal cord and traumatic brain injuries associated with an increase in higher speeds on the slopes and acrobatic moves such as jumps and twists while jumping. They also reported that wearing a helmet can reduce the risk of head injury by up to 60 percent.

THE RISKY PATH TO DIAGNOSIS

Children, as part and parcel of their development and growth, are undergoing rapid cell division, leaving organs vulnerable to the damages of radiation. So not only do parents need to deal with the injury itself, they must also make decisions regarding the danger to young cells from even low-dose ionizing radiation from diagnostic imaging examinations such as bone scans, CT scans, fluoroscopy and x-rays. A huge Australian study of 11 million children up to 9.5 years of age showed that the overall incidence of cancer for young people exposed to a CT scan was 24% greater than for those who were not exposed. A landmark study by Pearce et al showed that children exposed to 50 mGy (3–5 CTs) may have triple the risk of leukemia, and doses of 60 mGy may have almost triple the risk of brain tumors.

The alternatives. Often an MRI or a dynamic ultrasound will provide enough visualization for a diagnosis depending on the injury. In fact, ultrasound is actually reported to be a superior diagnostic tool in common finger flexor pulley injury in rock climbers. Unfortunately, many climbers are X-rayed for convenience and speed or because the physician is not aware of the diagnostic advantage of ultrasound. Stick to your guns regarding the mode of visualizing the damage. Sometimes we need to take a

hard line and insist. I've been stunned to see parents, who know better, simply accept the decision for X-ray or even worse — CT scan when MRI or ultrasound would provide the diagnosis. True, there is "low-dose" technology development going on, but remember the vulnerable fast cell division progressing in your child's body. There may be a diagnostic alternatives for your child's injury OR there is the possibility that the diagnosis can be easily made without the visual confirmation.

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