



HEALTH NEWS FROM THE DCF MEDICAL TEAM

PEDIATRIC NON-ACCIDENTAL TRAUMA (NAT)

What are the risk factors for NAT?

Child: chronic illness, behavioral challenges, prematurity, developmental delay, unwanted pregnancy

Parent: substance abuse, psychiatric illness, unemployment, emotional insecurity, young parents, lack of family support, unreasonable expectation of child's gaining of developmental milestones and the reason behind their behaviors

Environment: domestic violence, social isolation, death of a loved one, inadequate housing, financial stress

What factors raise concerns for NAT?

Some issues that raise concerns for healthcare practitioners are lack of history to explain the injuries, inconsistent or vague memory of the injury, differing or changing stories, delay in seeking treatment, level of concern is not consistent with the degree of injury, multiple injuries, and exam findings that are not consistent with the history.

What are the types of NAT?

Bruises: When looking at bruises, location and development stage is important. Walking children have more bruising than children who are merely cruising. Some areas where bruising is common are anterior surfaces, bony prominences, shins, forehead, scalp and upper leg. Some bruises raise concern when located on posterior surfaces, abdomen, buttocks, ears, genitalia and any pattern features to bruise such as loop marks or linear markings. Bruises progress from red to green to yellow to clear and the appearance and rate of healing varies depending on location, depth, amount of bleeding in tissues and pigmentation. Bruises cannot be dated.

Thermal Injury or Burns: Thermal injury/burns are usually accidental when you see a single burn site, on only 1 side of the body, small irregular lesion and an irregular splash mark. However, they maybe inflicted when you see sharp separation between burn and normal skin, stocking-glove distribution, multiple burn sites, a pattern to the burn, and on both sides of the body.

Skeletal Injury: The frequency of skeletal injury in child abuse cases varies between 11 and 55 percent. Up to 70% of abused children less than one year of age have fractures. The preferred diagnostic imaging technique for child abuse is a skeletal survey that consists of approximately twenty individual X rays. A follow-up skeletal survey usually is obtained 2 weeks after the initial survey. In many cases blood tests are obtained to evaluate for Osteogenesis Imperfecta (a brittle bone disease that can cause broken bones).

Head Injury: Non-accidental head injury symptoms vary depending on the severity of abuse episodes. Therefore, a high index of suspicion is often needed for adequate detection. Symptoms range widely, but may include: vomiting, irritability, increased sleepiness, seizures, feeding difficulties, full fontanelle (soft spot), confusion, slurred speech, retinal hemorrhages (abnormal bleeding of the blood vessels in the membrane in the back of the eye), apnea, unconsciousness, and death.

What does a medical assessment include?

A history, complete physical exam, head CT/MRI, eye exam by a pediatric ophthalmologist, skeletal survey, bone scan and blood tests, (e.g. blood clotting studies, liver function tests, toxicology screen).

What should you do if you suspect NAT?

If you suspect NAT, seek a medical evaluation immediately. Contact one of DCF nurses for assistance. Throughout the state there are Child Protection Programs with providers who are board certified in Child Protection Pediatrics and available for consultation by phone or appointment. They are located at major medical centers in Boston at Childrens, Mass General Hospital, Tufts Medical Center, Boston Medical Center and at North Shore Childrens-Salem, UMASS-Worcester, Baystate Medical Center- Springfield, and in Rhode Island at Hasbro Children's Hospital-Providence

References:

CDC policy on Child Maltreatment; Jenny, Carole, MD MBA., et al, "Analysis of Missed Cases of Abusive Head Trauma", Journal of American Medical Assoc 1999; McGuire, S, Moynihan, S. et al., "Burns", Elsevire Ltd.,, 2008; Policy Statement, American Academy of Pediatrics, May, 2009