(*De RadioGraphics y el Instituto de Patología de las Fuerzas Armadas)

*Resúmenes enviados y publicados con autorización de la RSNA.

From the Archives of the AFIP

Child Abuse: Radiologic-Pathologic Correlation

Gael J. Lonergan, Lt Col, USAF MC • Andrew M. Baker, MD
Mitchel K. Morey, MD • Steven C. Boos, Lt Col, USAF MC

In the United States, roughly one of every 100 children is subjected to some form of neglect or abuse; inflicted injury is responsible for approximately 1,200 deaths per year. Child physical abuse may manifest as virtually any injury pattern known to medicine. Some of the injuries observed in battered children are relatively unique to this population (especially when observed in infants) and therefore are highly suggestive of nonaccidental, or inflicted, injury. Worrisome injuries include rib fracture, metaphyseal fracture, interhemispheric extraaxial hemorrhage, shear-type brain injury, vertebral compression fracture, and small bowel hematoma and laceration. As noted, however, virtually any injury may be inflicted; therefore, careful consideration of the nature of the injury, the developmental capabilities of the child, and the given history are crucial to determine the likelihood that an injury was inflicted. The majority of these injuries are readily detectable at imaging, and radiologic examination forms the mainstay of evaluation of child physical abuse. Detection of metaphyseal fracture (regarded as the most specific radiographically detectable injury in abuse) depends on high-quality, small field-of-view radiographs. The injury manifests radiographically as a lucent area within the subphyseal metaphysis, extending completely or partially across the metaphysis, roughly perpendicular to the long axis of the bone. Acute rib fractures (which in infants are strongly correlated with abuse) appear as linear lucent areas. They may be difficult to discern when acute; thus, follow-up radiography increases detection of these fractures. For skull injuries, radiography is best for detecting fractures, but computed tomography and magnetic resonance imaging best depict intracranial injury.

http://radiographics.rsnajnls.org/cgi/content/full/23/4/811

(*De RadioGraphics y el Instituto de Patología de las Fuerzas Armadas)

*Resúmenes enviados y publicados con autorización de la RSNA.

From the Archives of the AFIP

Imaging of Primary Chondrosarcoma: Radiologic-Pathologic Correlation

Mark D. Murphey, MD • Eric A. Walker, MD • Anthony J. Wilson, MB, ChB • Mark J. Kransdorf, MD • H. Thomas Temple, MD • Francis H. Gannon, MD

Chondrosarcoma is a malignant tumor that produces cartilage matrix, and lesions that arise de novo are called primary. Primary chondrosarcoma is the third most common primary malignant tumor of bone, constituting 20%–27% of all primary malignant osseous neoplasms. There are numerous types of primary chondrosarcomas, including conventional intramedullary, clear cell, juxtacortical, myxoid, mesenchymal, extraskeletal, and dedifferentiated. The conventional intramedullary chondrosarcoma is the most frequent type, and it most commonly involves the long bones or pelvis in up to 65% of cases. Although the pathologic appearance varies with specific lesion type, chondrosarcomas grow with lobular type architecture, and these hyaline cartilage nodules demonstrate high water content and peripheral enchondral ossification. Imaging features directly reflect this pathologic appearance, and the various subtypes often show distinctive features. Radiographic findings often suggest the diagnosis of chondrosarcoma because of identification of typical "ring-and-arc" chondroid matrix mineralization (representing the enchondral ossification) and aggressive features of deep endosteal scalloping and soft-tissue extension. These latter features are usually best assessed, as is lesion staging, with computed tomography (CT) or magnetic resonance (MR) imaging. CT is optimal to detect the matrix mineralization, particularly when it is subtle or when the lesion is located in anatomically complex areas. Both CT and MR imaging depict the high water content of these lesions as low attenuation and very high signal intensity with T2-weighting, respectively. Understanding and recognizing the spectrum of appearances of the various types of primary chondrosarcoma allow improved patient assessment and are vital for optimal clinical management including diagnosis, biopsy, staging, treatment, and prognosis.

http://radiographics.rsnajnls.org/cgi/content/full/23/5/1245

(*De RadioGraphics y el Instituto de Patología de las Fuerzas Armadas)

*Resúmenes enviados y publicados con autorización de la RSNA.

From the Archives of the AFIP

Medulloblastoma: A Comprehensive Review with Radiologic-Pathologic Correlation

Kelly K. Koeller, CAPT, MC, USN • Elisabeth J. Rushing, COL, MC, USA

Medulloblastoma is the most common pediatric central nervous system malignancy and the most common primary tumor of the posterior fossa in children. This highly malignant neoplasm occurs more frequently in males and usually before 10 years of age. Clinical symptoms and signs are generally brief, typically less than 3 months in duration, and reflect the strong predilection of this tumor to arise within the cerebellum, most often in the vermis. Although much less common, the disease may also occur in adults, usually in the 3rd and 4th decades of life. Surgical resection, radiation therapy, and chemotherapy have substantially lowered the mortality associated with this tumor, with 5-year survival rates now commonly well above 50%. Still, both dissemination at the time of diagnosis and recurrence remain obstacles in achieving a cure. The tumor has characteristic hyperattenuation on unenhanced computed tomographic scans that reflects the high nuclear-cytoplasmic ratio seen at histologic analysis. The tumor typically appears heterogeneous on images, findings that are related to cyst formation, hemorrhage, and calcification and that are even more pronounced with magnetic resonance (MR) imaging. Evidence of leptomeningeal metastatic spread is present in 33% of all cases at the time of diagnosis and is well evaluated with contrast-enhanced MR imaging of the brain and the spine. Although controversial, postoperative surveillance with MR imaging is performed at most institutions in the hope of facilitating a better outcome. With continued research, treatment of these common neoplasms should improve, perhaps even achieving a cure in the future.

http://radiographics.rsnajnls.org/cgi/content/full/23/6/1613