

## Imaging Polytrauma In Children: Can We Do Better?

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Pediatric trauma is the number one cause of death in children, exceeding all other causes of death combined. Caring for pediatric trauma requires an understanding of the distinct anatomy and pathophysiology of pediatric population compared to adult trauma patients. Body size of children allows for greater distribution of traumatic injuries and multiple trauma injuries are common. Body of child has higher elasticity, even severe internal injuries may occur without any recognizable external signs.

The sensitivity of a radiological investigation for polytrauma is more important than its specificity with the primary aim of not missing any critical finding which is life-threatening. X-ray is the first important modality in primary survey. Focused assessment with sonography in trauma (FAST) and extended FAST (e-FAST) have crucial role in hemodynamically unstable patients. In the hemodynamically stable patients whole-body CT scanning is the most immediate radiological procedure. Although the exposure to ionizing radiation could increase the risk of developing cancer in future life, its immediate and detailed diagnostic accuracy outweighs potential damage.

Head injury severity is the principle determinant of outcome and mortality in polytraumatized children. CT brain is essential for acute management. Pulmonary contusions remain the most common form of pediatric thoracic trauma. Diagnosis is made by CXR in about 90% of cases. Abdominal injury is second common site of injury. It rarely requires surgery in contrast to adults, but need to be detected. CT scanning is diagnostic in only 60% of bowel perforation cases and may reveal free fluid without evidence of solid organ injuries. Contrast US (CEUS) is used in low energy abdominal trauma. Spine and pelvic injuries as well as injuries of extremities require age-adapted surgical procedures. CT and MRI are usual imaging modalities. MRI plays a pivotal role in patients with diffuse axonal injury and spinal trauma.

This lecture aims to discuss role of different kinds of imaging in pediatric polytrauma with some cases demonstration.