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Oral Presentation

Clinical Approach in Pediatric Trauma According to ATLS

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Abstract

To identify anatomic and physiologic characteristics of children which are different from adults and to explain major patterns and responses of different types of injuries and to apply ATLS principles in management of injured kids and to emphasize on injury prevention to reduce the impact of injury in children. Children have larger head, smaller jaw, shorter, narrower, funnel shaped airway, softer cranium, open fontanelles, and prominent occiput in younger child. Therefore, we need one inch pad under trunk for neutral position. Children have flexible spinal ligaments, anteriorly wedged vertebrae, flat facet joints, angular momentum forces, pseudosubluxation and spinal cord injury without radiological abnormality. The kids chest is soft, pliable, predispose to soft wall pulmonary contusion. Kids have horizontally aligned ribs, weak intercostal muscles. Abdomen is softer, and has thinner muscular wall. Spleen and liver is lower-riding. However, bladder is higher-riding. There are a few important physiologic points in children: Age-specific vital signs, smaller blood volume, decreased functional residual capacity, limited cardiorespiratory reserve and sudden deterioration, different urinary output, higher body surface area to mass ratio, thinner skin, less insulation by subcutaneous tissue. Children have larger tongue which predispose for more airway obstruction. Children have high anterior larynx; therefore we should use straight blade for endotracheal intubation. In children, head injuries are more common than trunk injuries. Thus, CNS and respiratory problem are more prominent than shock. Kids have much smaller trunk and fewer truncal injuries. Children have much larger head and more brain injuries. Children have more compact bodies and multiple injuries are typical. To give medications and fluid, Broselow tape is recommended. Pedestrian child has soft tissue contusions and lower extremity fractures if the trauma has slow pattern. However, head, trunk and lower extremity fracture is seen in fast patterns. When a child is automobile occupant and s/he is unrestrained, head, face and spine injury occurs. If s/he is restrained, lap belt complex occurs. Bicycle injury in a child without helmet might be associated with head, face, spine and upper extremity fractures. Handle bar can cause liver, spleen, pancreas and duodenum injuries. Law fall is associated with soft tissue contusions and upper extremity fracture. But high falls are associated with head, face, spine, abdomen and long-bone fractures. In treatment, ATLS principles and ABCDE priorities are the same. Airway obstructs easily; uncuffed endotracheal tube is used. Tension pneumothorax has poor outcome; therefore, we should avoid barotrauma. Vascular access and delivery of fluid and blood is important. Pediatric Glasgow coma scale is used to evaluate diffuse brain edema of patients. We would consider gastric dilation and prevent heat loss. There are some pitfalls: During intubation, one has to prevent main stem bronchial intubation due to short trachea. Take care to prevent obstruction of endotracheal tube. Hypovolemic shock has an unreliable presentation. In children less than six years old, intravenous access is difficult and missed hollow viscus injury is common. CT, DPL, FAST and different tubes are adjuncts. To detect abuse injuries, in history, we would have high suspicion in discrepancies, delay in care, repetitive injuries, inappropriate responses and medical neglect and in physical examination, take care to multicolored bruises, bilateral subdurals, retinal hemorrhages, femur fractures and abnormal injury contact burns. To prevent injury, analyze injury data, build local union, communicate the problem, develop prevention activities and evaluate program interventions.

Keywords: Ligament, Contusion, Trunk, Intubation, Fracture.

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