Peds Pearls

When Thunder Roars, Go Indoors!

Lightning Injuries

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The message from a public safety campaign produced by the National Weather Service urges children and adults to go indoors when they hear thunder; indeed, that is great advice! Lightning kills approximately 55 people each year in the United States with Florida being the state with the most reported injuries (don't let Disney know).

As a general rule, only 10% of the lightning we see results in what we can call “strikes.” Yes, only one out of ten lightning bolts go from cloud to ground, with 90% moving from cloud to cloud. Lightning will strike the tallest, pointiest, most isolated object within a 50 yard radius of the last branch of the lightning. Lightning can strike more than 5 miles away from the center of a storm and the odds of getting struck by it are 1 in 700,000. Most injuries occur while participating in outdoor activities, be it at work or play. Thus, if you are indoors while reading this and a thunderstorm is occurring outside, the chance that you will be struck by lightning is very slim indeed. So, by all means, continue reading the following tips, safe in the knowledge that you will be able to share this peds pearl of wisdom with others!

Prevention: Teach children (and adults!) that when they hear thunder or see lightning, they should go inside an enclosed building with solid walls and closed windows. An enclosed vehicle with a hard roof and windows rolled up will provide a safe refuge as well. More importantly, teach them **not** to take refuge under a tree, an open bus stop, in a tent, or near open bodies of water. If you are stuck in an open area, good luck! Seek shelter as soon as possible and remain sheltered until the storm has completely passed. Most importantly, pay attention to your surroundings!

Injuries: Those patients who are lucky enough to be conscious after a lightning strike will likely survive. However, the cardio-respiratory effects from a lightning strike may be devastating. Lightning can act as the "mother of all defibrillators" and put the heart into asystole. Even if the heart returns to a normal, actively beating state, the patient may still need prolonged ventilatory support after the initial resuscitation in order to survive. This is due to the electrical damage to the respiratory centers of the brain that can occur. Temporary EKG changes are not unusual in victims who do survive (Not surprising after being struck by hundreds of millions of volts of lightning!) Patients may also exhibit signs and report symptoms reflecting injuries to both the central and peripheral nervous systems such as dilated pupils despite the absence of any head injury. Patients may suffer traumatic injuries from the contact with lightning such as sudden and severe muscle contractions and should receive spinal immobilization per trauma protocols. Many victims receive superficial external burns and we can expect to discover more occult internal injuries (rupture of tympanic membranes, confusion, amnesia, cardiac injuries) after thorough assessment and testing.

Assessment and Treatment: Assessments are no different than with any other type of injury with one large exception, **multiple casualty incident (MCI) triage!** Patients in a MCI who are apneic or in cardiopulmonary arrest might appropriately be tagged “black,” aka dead. But in cases of a lightning strike, patients who are unresponsive, apneic, or in cardio-pulmonary arrest should be tagged "red" and treated first! This is because those who arrested post-lightning strike did not suffer an MI due to the usual causes related to long term conditions and behaviors. Instead, they received a massive defibrillation from the high voltage lightning strike. So, if they had good hearts to begin with, and if resuscitation is promptly initiated, they might actually have a good chance of coming back to the world of the living! Beyond this, people who are awake and alive are awake and alive. After caring for the most severely ill or injured, any remaining patients should be triaged as per other mass casualty systems (START, JumpSTART, etc.).

Scene Safety: We cannot over emphasize the need to be aware of your surroundings in the out-of-hospital environment. When treating a patient outside during a storm, provide basic life support and move the patient inside an ambulance or building to prevent additional injuries to rescuers from lightning. If you think lightning will not strike twice in the same place, you may be dead wrong!

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Contact us to have Scott DeBoer or one of our other pediatric experts present at your next conference.

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