Essentials – Lightning Strikes

Avoidance and Injuries

While being struck by lightning is unlikely for a large portion of the population, it is more of a possibility for climbers due to the locations where we recreate, including ridges, mountaintops, and rock faces. In North America, mountain ranges are common environments for lightning strikes during the summer months. A majority of lightning strikes do not lead to instant death; however, permanent injuries and other issues almost always arise, and furthermore they can lead to secondary accidents from impaired judgment.

TYPES OF STRIKES

Lightning strikes are described by the direction of the strike. A direct strike is statistically more physically devastating, with a higher rate of death associated, but much more common are side ashes (a.k.a. side splashes), where a tree or similar object is struck and the current travels down and "jumps" to a nearby object or person. This is also why groups of people are often struck. A particular risk to climbers are ground strikes, where rock is struck and the current travels across or through it. It is critical, also, to understand that lightning can travel quite far and does not have to be associated with rain. Thus, the phrase "a bolt from the blue."

PREVENTION

There is no true "safe place" outside when it comes to lightning, other than a well-grounded and protected shelter or vehicle. However, places that are more dangerous include ridgelines, summits, open fields on or near high terrain, boats or open water, near trees at the edge of open water, in the entrance of a shallow cave or overhang, or on the windward side of mountains (where storms come from). Safer locations include dense forest areas away from the tallest tree, low in gullies or draws, or inside deep caves.

In the summer, climbers and mountaineers should aim to be off summits or ridgelines no later than 2 p.m. and ideally by noon. If you are on a vertical face when a thunderstorm approaches, going down is generally the best option, unless by doing so you have to cross more dangerous terrain.

RULES TO LIVE BY: 30-30 FLASH-BANG

When there is an approaching storm, a minimum time span of 30 seconds between flash and thunder indicates that you are a safe distance from the storm. However, you may need more of a gap between flash and bang—i.e., the storm is farther away—to allow adequate time to move to a safer area. In short, start evacuating from exposed locations sooner than you might think is necessary. After a storm passes, wait no less than 30 minutes from the last flash or rumble to resume activities.

AVOIDANCE AND INJURIES

It is said that just before an imminent strike, you may feel the hair on the back of your neck or your head rise up. When this occurs, metal objects begin to buzz, or if you are caught by a rapidly approaching storm, assume the safety position—with the term "safety" very loosely used. Find the

lowest spot immediately available, spread out if you're in a group, and crouch down with your feet close together and your ears covered. If available, squat on a sleeping or boulder pad, and get away from any metal climbing gear.

COMMON INJURIES FROM STRIKES

Lightning delivers a massive amount of energy in an extremely brief moment. In that instant, electricity travels the path of least resistance, and this is the reason the body's nervous system takes the brunt of both immediate and delayed damage. The impacts include pain and keraunoparalysis, a temporary paralysis, usually of the limbs and associated with pale or mottled skin. Keraunoparalysis can mimic spinal injury and usually resolves after several hours. Vital organs that are affected by electricity include the heart and lungs. It is quite possible for nerves leading to the lungs to be paralyzed. While this is often temporary, lack of breathing (and oxygen) can lead to secondary cardiac arrest or brain injury.

Both direct and indirect strikes can cause other injuries, like those associated with blast injuries from change in air pressure, being thrown into a hard object, or being knocked off of a ledge or stance. It is critical to assess breathing ability after a strike, as collapsed lungs can develop from secondary injuries. Concussions and seizures are also possible.

BURNS

Burns from lightning strikes are not usually a major issue, but wound care needs to be provided to prevent infections. Lightning burns are usually skin-deep and often linear, rather than the entry and exit wounds associated with high-voltage injuries. This is because the electricity flows superficially along the pathway of least resistance. The ferning patterns (Lichtenberg figures) sometimes seen on the skin after strikes are actually not burns and resolve on their own with no permanent issues. Lightning strikes also may cause punctate burns, which are small, circular burns closely spaced together. Check all fingers and toes carefully for these burns.

ALWAYS EVACUATE

Every scenario varies and a plethora of things need to be taken into consideration in terms of how to evacuate, but all people that have experienced a lightning strike should be evaluated medically. Indicators of high-risk injuries include suspected direct hit, loss of consciousness, any nerve, spinal cord, or brain dysfunction, chest pain, shortness of breath, burns to the head, or if the climber is pregnant.

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Images

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