

LIGHTNING DATA CENTER MINUTES

February 12, 2016
ST. ANTHONY HOSPITAL WEST, LAKEWOOD, CO

“As the saying goes, ‘it’s better to be late in this world than early in the next.’” Source: Wild Backpacker. <http://www.wildbackpacker.com/wilderness-survival/articles/surviving-a-lightning-storm/>

1. Meeting began at 12:00 PM and adjourned at 1:00 PM. Members Present: Clark, Johnson, Elder, Wachtel, Langford, Yarnell, Wells, Nibbe, Gift, Cui-Gift, Thorpe, Swanson, Stewart, Claus and DeForst. Clark moderated.
2. Two lightning-related conferences will be held simultaneously in Porto de Galinhas (Pernambuco), Brazil, on June 6-9, 2016. The conferences are: International Conference on Grounding and Earthing; and the 7th International Conference on Lightning Physics and Effects. Abstracts are due March 4. For more information, visit them at: www.groundconferences.com.
3. The 33rd International Conference on Lightning Protection will be held at the Estoril Congress Center in Portugal on September 25-30, 2016. For more information, visit them at: <http://iclp2016.org/>.
4. Greg Stewart mentioned a website showing a portable tent-like shelter which, in theory, is supposed to protect people from lightning strikes. The shelter is referred to as a “Bolt – Mobile Lightning Protective Shelter”. There are three tent designs. A YouTube video within the website shows the structure taking a hit from a discharge in a lab. This appears to be a student design project performed under the guidance of a PhD mentor. For long-time members of the LDC, this harkens back to Ken’s idea of a “Lightning Safety Bag”, which we discussed back in the 90s. Some members expressed concerns about the viability of the Bolt shelter. Others side people with this shelter may be emboldened to take undue risks while hiking in the backcountry. Link: <https://www.behance.net/gallery/33055219/BOLT-mobile-lightning-protective-shelter>
5. Phil Yarnell brought a copy of a page written about lightning injuries by Dr. Samuel Alexander Kinnier Wilson in 1937. He discussed lightning injuries to the nervous system, transients, and currents. A photo showed a man with ferning.

6. Dr. Yarnell presented three lightning strike cases. Here are my notes.

Case 1: The patient did not know if the strike was a side splash or ground current. In hindsight, the patient was in a state of shock. Some of patient's complaints are as follows: Two symmetrical scars in eyes. Blurred vision in right eye. Tinnitus. Restless on the first night. On the day after, the whole body hurt and the patient felt weak. There was muscle damage from soreness and weakness and the urine was discolored due to muscle damage. Memory loss, scrambled sentences. Patient is light-sensitive some 2 years following the strike. More recently, patient has the most pain in the legs and hips. One day, patient experienced a strange sensation in the head and said a storm was coming and went inside, even though the weather was clear and sunny. About a half-hour later, a storm did come through the area. Phil asked Dr. Cherington if there were any tests for hypersensitivity. Patient wants to know how she became sensitive to thunderstorms before they arrive. Phil suggested a hyperbaric test may yield some clues. Steve Clark recommended a forensic reconstruction of the weather conditions on the date she had the strange sensation. Steve also suggested the patient may have responded to a rapid change in barometric pressure or possibly infrasound, perhaps from a thunderstorm. Howard Wachtel said the patient may have subconsciously learned of a forecast of thunderstorms during her normal activities and thus may not have presaged the storm via bodily cues. Phil argued, saying numerous patients report having some kind of heightened sensitivity to storms.

Case 2: A motorcyclist was hit by lightning on the right shoulder. The lightning went through his hand. His recall of the accident is dim. He was wearing a helmet at the time. Several weeks after his discharge from the hospital, his attention span was very short. He has a short temper and experiences pain in his hands and feet. CT scan shows minor hemorrhage. He could not make this meeting; hopefully he can come next time. This case illustrates many of the similarities in both head injury and lightning strike disabilities. Is there a common pathophysiology in both?

Case 3: A boy was outside on a sunny day in a tree-lined open field when he was struck by lightning. CPR was performed for one-half hour following the strike. Since the strike, he has had the following health issues and treatments – not necessarily in the order listed here. Hypothermic therapy was used to treat post-cardiac arrest. MRI showed injury to the basil ganglia and occipital lobe. He has undergone multiple sessions of PT/OT. A tube was placed for eating. He had a kidney stone and a perforated bowel. He is completely dependent on his parents. He can bear weight, but has scoliosis, or curvature of the spine. He shows awareness and understanding and his auditory systems appear to be okay. His vision is a question. Focuses gaze. His sleep cycle has been compromised. There is severe atrophy in his brain due to a lack of oxygen. Phil mentioned the varying degrees of consciousness a patient can have following a lightning strike. One marker of a patient in a post-cardiac state shows up when the patient doesn't respond to stimuli. Patient is not in a vegetative state if he responds in a meaningful way to the environment. Earliest progression is to a minimally conscious state, which then can lead to further improvement or stabilize at that level. To summarize, this is an example of the devastating cardiac arrest sequelae of a lightning strike, presumably during the vulnerable part of the cardiac cycle, with some severe long-term effects of hypoxic perfusion brain injury.

7. Questions, comments, notification of errors, and critiques of these minutes are welcome. Please forward those to Steve Clark at: sclarktoto@gmail.com. Please keep your communications professional and respectful. Communications will be forwarded to the appropriate author(s) of the minutes and addressed accordingly.
8. LDC Disclaimer: These minutes do not represent official positions of the LDC or its members. They simply reflect the comments made at the meeting. Furthermore, the LDC does not implicitly or explicitly recommend or endorse any product or service. Any product or service presented in these minutes is done so for purposes of discussion and analysis. The merit (or lack thereof) is open for the consideration and review by the entire membership.
9. Next meeting: Friday, March 11, 2016 at 11:45 AM at St. Anthony Hospital West in the Pinecone Room.

Respectfully Submitted,
Steven E. Clark, Consulting Meteorologist

Lightning Links

This is a monthly listing of periodicals, websites, and videos about lightning and allied areas from a variety of sources. A headline or description is listed, followed by the link. Please note that some of the links are perishable, which means you'll need to go to the source for the information.

Article about an Australia teenage boy killed by lightning while on vacation.

<http://www.dailymail.co.uk/news/article-2817493/He-cheeky-kid-people-laugh-loved-beach-Fathers-heartwarming-tribute-15-year-old-son-Jayden-killed-lightning-strike-moments-surfing-friends-sunshine.html>
