

LIGHTNING DATA CENTER
MINUTES
OCTOBER 10, 2003
ST. ANTHONY CENTRAL HOSPITAL

Quote of the Month:

“The statisticians are bound to be compiling statistics now. There’ll be plenty of erudite controversy you can be sure.”

Eugene Ionesco in Rhinceros, 1960

1. Meeting began at 11:30 am and adjourned at 1:55 pm.
2. Members present: Bradley, Cherington, Collier, Foley, Gift, Hodanish, Keen, Kennedy, Lammertse, Lancaster, McDonough, Middleton, Olsen, Resignolo, Stewart, Wachtel, Wells, Yarnell.
3. I brought the following articles (abstracted in part here):
 - a. Moore CB. Background for the AMS statement on lightning protection systems. BAMS 2003;84:118-121.

“To provide effective protection for structures, a lightning protection system must therefore include the following:

- 1)A sufficient number of rods must extend above the upper portions of the structure to be protected and their tips must be so exposed that one of them becomes the locally preferred strike receptor upon the close approach of an initiating leader...
- 2) The connection between the strike receptor and the earth the ‘down-conductor,’ must be able to carry the rapidly varying lightning current without significant heating...
- 3)The impedance to the flow of current in the down conductor must be sufficiently low that ‘side flashes’ to objects in the vicinity do not occur as a result of high voltages developed by the passage of the current.
- 4)The connection from the down conductor to the Earth must allow the lightning current to flow into the ground without the development of large electrical potential differences on the Earth’s surface and without creating hazards to personnel or structures nearby.
- 5)All large metal components of the structure should be connected electrically to its down-conductor system to minimize the capacitance effects and to allow the transfer to the earth of the ‘displacement currents’ that flow when the external electric fields are changed abruptly by the lightning discharge.
- 6) Surge protection should be provided for the electrical service and for all electronic equipment within the structure.”

- b. Bailey DM, Bartsch P, Cooper MA. Electron paramagnetic resonance spectroscopic evidence of increased free radical generation and selective damage to skeletal muscle following lightning injury. *High Altitude Med & Biol* 2003;4:281-289.

“The case study examined changes in peripheral markers of free radical metabolism and skeletal/myocardial muscle damage 30 h after a mountaineer had survived a lightning storm, having experienced contact with what was considered to be ‘upward leaders’ at 4200m. Venous blood was assayed for molecular markers of skeletal and myocardial muscle damage. Ex-vivo spin trapping combined with electron paramagnetic resonance (EPR) spectroscopy was incorporated for the direct detection of free radicals. These findings are the first to document lightning-induced free radical generation and selective damage to skeletal muscle in a high altitude mountaineer.”

4. Mikhail Shmatov sent a presumed ball lightning report from the Internet. A woman reported seeing a bright light in her house that moved through a hallway and disappeared. This was followed by a “loud explosion.” She found her husband on the ground. He was apneic and had a burn on his chin. Since then he reportedly has many medical problems including tumors of the pancreas and gall bladder. The website is: www.amasci.com/weird/unusual/bl.html.
5. Ron Holle sent an announcement of the 18th International Lightning Detection Conference in Helsinki, June 7-9, 2004, sponsored by Vaisala.
6. Ms. Anissa Smith is Director of Health Information Management and Privacy at St. Anthony Hospital. She spoke to our members about HIPAA (Health Insurance Portability and Accountability Act of 1996). She gave an excellent summary of this timely topic. She discussed many related subjects including: PHI (Privacy Health Information), healthcare worker’s responsibilities, electronic data interchange, administrative and technical safeguards.
7. Dr. Philip Yarnell presented two of his patients that were struck by lightning this summer.
 - a. The first patient attended the meeting. Her lightning-related event occurred on July 26, 2003 at about 4:30 pm at Red Thunder Lake. She was resting on a rubber mattress in her tent. There was a light rain outside when lightning apparently struck a tree near her tent. She lost consciousness and was pulseless. Her relatives took her to a fire station and then, she was taken via helicopter to the hospital. She was discharged from the hospital on the third day. About one month after the lightning strike she began having severe pain in her feet. Dr. Yarnell’s differential diagnoses include peripheral neuropathy and myelopathy. He prescribed Neurontin and she is improving.

- b. The second patient was struck on August 24, 2003 at about 3:30 pm. It was raining at the time of the lightning strike. He and his friends were four-wheeling on Red Cone Pass. The lightning knocked out his tongue ring. His friends noted that "smoke was coming from his chest." They attempted CPR. He was taken by Flight for Life to St. Anthony Central Hospital and arrived at about 5:00 pm. Dr. Yarnell first saw the patient about one hour later. He noted first degree burns on the patients' neck and chest, and second degree burns of his right foot and ankle. He also noted ferning patterns on the skin. Interestingly, he observed that the ferning pattern blanched with pressure, suggesting a vascular component. At about 7:00 pm, Dr. Yarnell obtained a skin biopsy of the ferning pattern. Phil took pictures of the burns and ferning patterns that same day. Subsequently, the pathologist reported the biopsy consistent with "normal skin." Brain MRI and CT scans were normal. Phil saw the patient again on the next day (August 25), and noted the ferning pattern was nearly gone. The patient was discharged with improving status of his tongue and healing burns. He did have hearing impairment on the right side. Phil brought the pictures of the skin lesions to the meeting.
8. Ms. Linda Cooper, a LSESSI member, sent an email to our members on the subject of people who have been struck by lightning on several occasions. This has happened to a number of people. Ms. Cooper would like to hear from any of our members who have thoughts on this matter. She also expressed her thanks for LDC minutes.
9. Steve Hodanish and Mike Foley were scheduled to speak at this meeting on "Lightning Casualties of the Horrific Colorado Summer of 2003. This year there have been 5 lightning fatalities in Colorado. (average annual = 3). Because of the lack of time, we had time only for a brief presentation by Steve. He had much important information to discuss. Steve's information can be found at the following website:
www.crh.noaa.gov/pub/lrg/LDC_8_Oct_03.ppt
10. Next meeting: Friday, November 14, 2003 at 11:30 am in the Main Auditorium of St. Anthony Central Hospital.

Speakers: Mike Foley and Sheryl Olson. Topic: Lightning Casualties of the Horrific Colorado Summer of 2003 (continued).

Respectfully submitted,

Michael Cherington, MD