

LIGHTNING DATA CENTER
ST. ANTHONY HOSPITAL, DENVER, CO
MINUTES
JULY 14, 2002

Quote of the Month:

"Uranium deposits were discovered in Kazakhstan in 1945, but still in insufficient quantities...Beria had discovered from Soviet scientists...that the Kaiser Wilhelm Institute for Physics in Dahlem..was the center of German atomic research...Next to this bunker stood the Blitzturm, or 'tower of lightning,' which housed a cyclotron capable of creating 1.5 million volts."

Anthony Beevor, The Fall of Berlin 1945, 2002

1. Meeting began at 11:30 am and adjourned at 1:15 pm.
 2. Members present: Arendt, Becker, Benson, Bradley, Burrows, Caputo, Cherington, Collier, Foley, Hodanish, Hodge, Kozak, Larson, Lines, McDonough, Moore, Olson, Russon, Sanders, Swanson, Wachtel, Wallace, Winkworth.
 3. I brought the following article from the literature (abstracted in part here):
 - a. Ozdemir Al, Seymen P, Yurekli OA, et al. Transient hypothalamic hypothyroidism and diabetes insipidus after electrical injury. South Med J 2002;95:467-8.
 - b. Paterson JH, Turner JWA. Lightning and the central nervous system. J Royal Army Med Corps 1944;82:73-5
- "A pioneer, aged 39, was admitted to hospital...on August 30, 1942...A corporal and he had gone into a bell-tent; shortly after this the tent was struck by lightning and caught fire. The fire was rapidly extinguished and when the adjutant entered the tent a minute or two later he found the corporal dead with superficial burns in the form of a wide irregular network over the left thigh, hip and shoulder. The patient was unconscious but...regained consciousness for a few minutes and then relapsed...He was admitted to a general hospital where he was found to conscious with the right arm and both legs rigid and the left arm flaccid...These signs gradually diminished during the next twenty-four hours."
- c. Resnik BI, Capland L. Discrete keloids in a lightning strike. J Amer Acad Dermatology 1994;30:1039-40

"Cutaneous lightning injury has been organized into four categories: 1 linear burns, 2 keraunographic markings...3 contact burns, and, 4 entry and exit burns (punctate full-thickness burns)...first reported case of keloid formation as a result of a lightning strike."

4. A planning meeting was held earlier this morning. It was attended by: Mains, Foley, Coniglio, Middleton, Lilly, Russon, Wallace, Wachtel, Cherington. We discussed new directions for LDC at St. Anthony Hospital. The Trauma Service and LDC will develop a clinical panel from the existing group of trauma surgeons and other specialists. St. Anthony can proudly claim to be a center of excellence for the treatment of lightning and electrical injuries. The website will be modernized and it will list the physicians who will be available to see lightning and electrical injury patients. The new name of this service is to be chosen in the near future.

5. The Round Table Discussions today were led by Gil McDonough and Rick Russon. Both discussions were excellent and elicited much input from LDC members present. Here is a sampling of the discussions from my notes.

Gil McDonough introduced the first science subject at today's meeting - Lichtenberg Figures (LF). Gil mentioned several clinical aspects of LF including their transient nature. Based on the observations of Maury Miller of the Larimer County Coroner's office, LF may fade more slowly in deceased patients. The pattern does not blanch. Gil offered several explanations for this mysterious ferning pattern seen only in lightning patients: 1.) dilation effect at capillary site of vascular tree; 2.) Rouleaux formation, clumping of red blood cells; 3.) damage to cell membranes from electric current resulting in slowing of flow of red blood cells.

Rick Russon led the discussion on the question: can lightning originate in forest fires. Rick, Steve Hodanish, Ernest Kozak, and others provided much of the discourse. Convective forces are essential for the development of lightning from forest fires. Charge separation is the cause of lightning. Smoke contributes to more positive charge clouds. Conditions needed for fires to grow: dry weather; wind; unstable lapse rate. Steve was on scene for many days during the Hayman fire southwest of Denver. The terms "wet lightning and dry lightning" refer to the amount of moisture in the thunderstorms associated with lightning.

6. Next meeting at 11:30 am on Friday August 9 will be held in the Birch Room of St. Anthony Central Hospital. Topic: Round Table Discussion. Bring ideas and materials to share with the group.

Please note this change in site. Instead of meeting in the auditorium, we shall meet in the Birch Room on the ground floor for this month only.

Respectfully submitted,

Michael Cherington, MD