Lightning is a serious danger, and constitutes one of our country’s deadliest weather phenomena. A review of the southern African medical literature shows a paucity of published data on lightning fatalities, with most reports coming from the lay press. A retrospective descriptive study for the period 1997 - 2000 of lightning fatalities on the South African Highveld has shown that area to have a lightning ground-flash density of 6 - 9 flashes/km²/year, with a high incidence of thunderstorm days per year (some 40 - 70) (Tracey Gill, South African Weather Service – personal communication). The mean annual lightning death rate in our country ranges from 1.5 to 8.8 deaths per million inhabitants, which represents one of the highest rates in the world.

When lightning deaths are witnessed, the medico-legal examination is greatly facilitated. However, when such deaths are not witnessed the investigation can be extremely difficult. In South Africa many non-specialist medical practitioners perform autopsies on lightning-related fatalities, with a resultant lack of uniformity in the medico-legal reporting. A call is therefore made for greater attention to detail in the medico-legal investigation and reporting of lightning-associated deaths. The following autopsy guidelines are suggested.

**Case history**

If a witness is available it is important to ascertain the following: (i) was there a storm?; (ii) was there lightning?; (iii) did the witness actually see the lightning strike the victim?; (iv) was death immediate or not?; (v) where was the deceased at the time of the strike? (e.g. under a tree, on a golf course); (vi) was resuscitation attempted? (vii) what was the activity of the deceased before death?; (viii) a meticulous description of the lightning event must be given; (ix) how many people were involved?; (x) were there any survivors, and if so where are they? (xi) a medical history of the deceased must be taken, specifically any cardiac problems, etc.; and (xii) a history of electrical storm activity should be ascertained from the South African Weather Service, as their recently procured Vaisala state-of-the-art lightning network detection and location system should be able to assist with the exact time and location of the strike.

**Scene investigation**

The following features may be present at the scene: (i) there may be damage to nearby trees, such as splitting or removal of bark; (ii) arc marks may be present on walls or nearby structures; (iii) the ground may display a fern-like pattern; and (iv) the soil may show fulgarite formation, i.e. bore or tube-like structures formed in sand or rock by lightning.

In order to record the case for scientific purposes, a relevant academic institution or other expert in the field should if possible be advised of the incident, especially if there is any suggestion of litigation by a surviving party.

**Postmortem examination**

A complete postmortem examination should be performed. Special attention should be paid to the following:

1. The external examination should include a meticulous description of the clothing and any evidence of attempted resuscitation.
2. Metal objects may have burned the underlying skin, or may have been marked by the heat of electrical arcing. Metal objects may show signs of fusing, zincification, cuprification and/or magnetisation. Metallic objects such as tooth fillings, spectacles, belts, buckles, coins and pacemakers should be specifically commented on.
3. The type, pattern and distribution of any cutaneous thermal injuries should be noted, including clusters of punctate burns, blisters or charred burns.
4. Rupture of tympanic membranes (use an otoscope) should be noted.
5. Mention should be made of singed and/or scorched hair.
6. Eye signs, such as retinal detachment, should be noted (cataracts can be difficult to demonstrate postmortem).
7. Unique arborescent or fern-like injuries (Lichtenburg figures) should be noted.
8. The procedure for internal examination should be identical to that of any careful forensic autopsy.

**Special procedures**

The following special procedures may be undertaken: (i) diagrams should be constructed where possible, as graphic
documentation of electrical injury patterns assists visualisation; (ii) close-up and distance photographs should be taken; (iii) X-ray examination may be helpful; (iv) histological examination may be of assistance; (v) toxicology may be useful; and (vi) evidence/specimens should be collected and preserved as equivocal cases may require electrical testing by an electrical expert.

Conclusion

Compared with other parts of the world, South Africa has a relatively high lightning fatality rate. An improved medico-legal investigation will not only facilitate the judicial process, but will also facilitate research, which will hopefully lead to an improved understanding and knowledge of keraunomedicine.

Our administration service comprises the following:

- Full medical practice management including:
  - Old debt/account recovery
  - Medical Aid accounts
  - Submission of account up to 90 days to all Medical Aids via HealthBridge, Hand Delivery or post
  - Final demand letters ad active credit control for accounts 120 days and over
  - TransUnion ITC® listing of patients with accounts over 150 days
  - Private accounts
  - Final demand letters and active credit control for accounts 120 days and over
  - TransUnion ITC® listing of patients with accounts over 150 days
  - WCA/IOD accounts
  - Hand delivery and/or postage of accounts to the relevant commissioners
  - Late/Deceased accounts
  - MVA/3rd party accounts
  - Prisoner (pre-trial and sentenced) account
  - Hand delivery of accounts to the SAPS Head Office
  - RAP (Road Accident Fund) accounts

Full monthly confidential Practice figures including:

- Full age analysis by Medical Aid Administrator
- Full Turnover and Income Analysis
- Full Payment Analysis

- Specialised reports tailored to the specific needs of the individual practice

Monthly postage of current, 30, 60 and 90 days accounts to the patients Credit Control:

- Immediate credit control on any accounts rejected by the Medical Aid
- Tracing of absconded patients where necessary

The Practice Supplies:

- Electronic worksheets (facilitated by a proprietary worksheet capture program supplied by Praximed at no cost), downloaded on a weekly or more frequent basis by Praximed.
- Completed patient admission forms (supplied by Praximed)
- Completed patient admission forms (supplied by Praximed)
- Any relevant WCA documentation required
- Copies of all receipts issued by the Practice
- Electronic Practice bank statements for the verification of EFT payments by the Medical Aids and/or patients

Management Fee:

Our fee is based on a percentage of monthly payments received, and no the monthly Practice turnover. The Percentage depends on the specific speciality of the Practice. If we do not recover the money, the specific account’s administration cost will be Praximed’s.