

Enlightening Injuries due to Lightning

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Abstract

"Lightening" So called atmospheric electrical discharge when hits a human being can produce fatal complications. It causes Neurological manifestations, vascular complications, otological complications too as per available literature. Herewith reporting an unique case of **Enlightening Injuries due to Lightning**, Causing ECG changes as well as delayed onset Bilateral LMN type of facial palsy and cerebellar dysfunction, which improved with Corticosteroids without any residual permanent neurological deficits.

Keywords: ECG- Electrocardiography, LMN- Lower Motor Neuron

Introduction

Injuries due to lightning can be mild to fatal, it can affect any system in the human body. Here is one interesting unique presentation following a lightning injury.

Case Report

We present a case of a young adolescent male patient without any co morbidities, occasional alcoholic, with alleged history of lightning injury without any entry or exit wounds, followed by loss of consciousness for more than 30 minutes, patient was initially taken to a private hospital for first aid and was referred to our institution for further management.

On presentation patient was conscious, well oriented, had no entry or exit wounds, hemodynamically stable with normal higher mental functions, without any cranial nerve abnormality, no evidence of spinomotor weakness and only pain in the left shoulder joint on doing overhead abduction, without sensory impairment or cerebellar signs or meningeal irritation.

His routine blood parameters were within normal limits except of elevation in total Creatinine phosphokinase without any evidence of myoglobinuria, ECG showed tall tented T waves in all the chest leads.

Patient was admitted for observation and was given only analgesics and supportive management. Subsequently on day 2 of injury patient developed Cerebellar signs in the form of in-coordination while taking food to mouth and not able to comb in hair, neurological examination revealed impaired finger nose test and impaired finger finger nose test and impaired disdiadakokinesia.

Following this incidence neuroimaging (MRI BRAIN plain with Diffusion weighted imaging) was performed, which was well within normal limits. Later on patient developed sudden onset Bells Palsy left side on day 5 followed by right side Bells palsy on day 7 of injury.

CT TEMPORAL Bone was performed which showed bilateral preunonisation of mastoid air cells which was suggestive of chronic mastoiditis. There was no involvement of glossopharyngeal nerve, gag reflex was preserved.

Patient was started on Inj Methyl Prednisolone pulse therapy for 3 days followed by oral steroids for 4 weeks, patient showed improvement in symptoms after pulse therapy and complete recovery without any residual damage after 4 weeks of corticosteroids and physiotherapy. The patient has been followed up for more than 3 months, there is no evidence of any other neurological symptoms or signs.

Discussion

The most important characteristic features of lightning injuries are multisystem involvement and widely variable severity.

Keraunoparalysis, temporary paralysis after lightning injury that may last for minutes to hours,(3)

Lightning injuries can be classified as:

1. Mild,
2. Moderate
3. Severe

Mild lightning injury is rarely associated with superficial burns, but persons struck often report loss of

consciousness, amnesia, confusion, tingling, and numerous other nonspecific symptoms.

Moderate lightning injury may cause seizures, respiratory arrest, or cardiac standstill, which spontaneously resolves with resumption of normal cardiac activity.

It is present with mild superficial burns and patient do develop neurological manifestations. Patients with severe lightning injury usually present with cardiopulmonary arrest.

Mode of Injury

1. Direct strike: This is the most Serious type of lightning strike and is usually fatal.
2. Side flash: This Is A Much More Common Form In This type, lightning First Strikes Another object, example a tree then takes the pathway of least resistance by flashing to the person standing next to the tree.
3. Stride potential: In this lightning strike the ground travels through the surface of the earth, it my strike a person if on its path.

Lightening injuries reported so far in the literature are Immediate loss of consciousness, Amnesia and confusion, Aphasia, Coma, Seizures, Intracranial Haemorrhage, Hematomas, Keranoparlysis, Transient Hypertension, ECG changes, Atrial fibrillation, Ventricular Arrhythmias, Ventricular premature ectopics, Respiratory complications, Cataracts, Macular holes, Irits, Vitreal hemorrhages, Retinal detachment, Optic nerve Damage, Rupture of tympanic membrane, Disruption of bone of hearing, Dizziness, Instability from Vestibulocochliar nerve.(4)

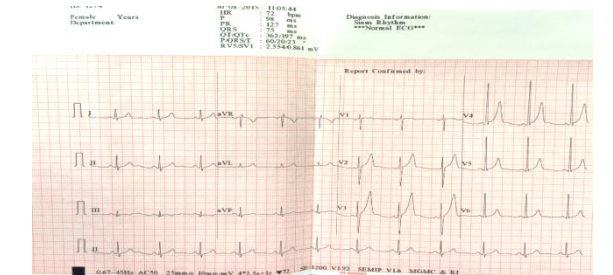
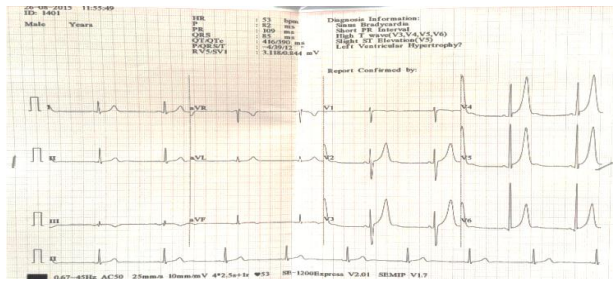
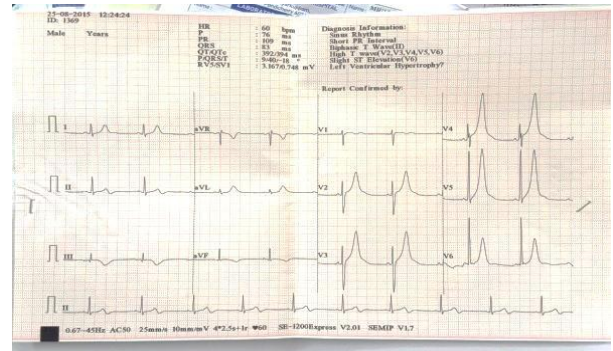
Our patient had History of loss of consciousness, with very subtle cerebellar features like mild degrees of in coordination as well as ataxia. All the routine blood investigations were within normal limits, ECG showed sinus rhythm with Tall tented T waves in all chest leads. Neuroimaging was normal. 2D Echo was performed in view of ECG changes, which was within normal limits. Further developed bells palsy in the left side followed by involvement of right side after 5 days. Patient was started on pulse therapy of injection Methyl Prednisolone for 3 days followed by oral steroids. Patient showed dramatic improvement in both side facial palsies and patient was discharged subsequently after treatment.

In a study done by Andrew D Reisner et al there was presence of delayed neuronal damage causing demyelination and vascular necrosis (1)

Another study done by ashis Patnaik et al there was evidence of pan brachial plexus neuroprexia following lightning injury. (2)

Conclusion

Lightening injuries causing complications like bilateral bells palsy and cerebellar dysfunction is never studied before and hence reporting they required corticostroids as well as physiotherapy for complete recovery.



References

- [1]. Delayed neuronal damage induced by lightning and electrical injury; neural death, vascular necrosis and demyelination - Andrew D Reisner.
- [2]. Pan-brachial plexus neuropraxia following lightning: A rare case report – Ashis Patnik, Ashok Kumar Mahapatra et al.
- [3]. Cooper MA. Whether the medical aspects of lightning injury are different in developing countries. Preprints, International Conference on Lightning Protection. Vienna, Austria. September 2-7, 2012.
- [4]. Lichtenberg R, Dries D, Ward K, Marshall W, Scanlon P. Cardiovascular effects of lightning strikes. J Am Coll Cardiol. 1993 Feb. 21(2):531-6.