LETTER TO THE EDITOR

Snakebite Mimicking Brain Death: Bedside Clues

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Abstract

Agarwal et al.[1] have successfully managed three cases of snakebites who manifested features similar to brain death but were not true brain dead. Most likely these cases might have gone on to a status of locked-in syndrome (LIS). LIS is a status in which there is complete paralysis of voluntary muscles in all parts of the body except for those that control eye movements. Moreover, this condition makes an individual completely mute and paralyzed in a conscious patient.[2] In these individuals, communication may be possible through eye movements.

Keywords: Anti-snake venom, ICU management of snake bite, Neurotoxic snake bite.

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Dear Editor,

Agarwal et al.[1] have successfully managed three cases of snake bites who manifested features similar to brain dead but were not true brain dead. Most likely these cases might have gone on to a status of locked-in syndrome (LIS). Locked-in syndrome is a status in which there is complete paralysis of voluntary muscles in all parts of the body except for those that control eye movements. Moreover, this condition makes an individual completely mute and paralyzed in a conscious patient.[2] In these individuals, communication may be possible through eye movements.

We share some of the useful bedside clues below to distinguish true brain dead from LIS based on our previous experiences.[3]

- **Movement of eyes and eyelids:** Kindly observe the response for nonverbal communication in the form of upward eye movement "yes" and downward eye movement to say "no", when these pseudo brain dead/locked-in syndrome cases are questioned in an understandable manner.[4]
- **Preservation of frontalis muscle activity:** In many of the pseudo brain dead/locked-in syndrome cases frontalis muscle tends to escape. In such cases, victims may respond to commands by way of constriction of frontalis muscles.
- **Electrophysiological changes:** Eliciting somatosensory-evoked potential responses in these victims with median nerve stimulation not only help the treating clinician to identify these cases but also give confidence to convince the patient's relatives to continue the treatment.[5]
- **Pupillary response:** Mid dilated to constricted pupils may be seen when the eye is opened passively in such suspected cases, in contrast, to fully dilated pupils in brain dead cases.

Doctors have to exercise caution before declaring brain dead, as it has social, legal, emotional, ethical, and professional components. Hence, it is important to examine the cases thoroughly and observe for subtle manifestations/response to commands at the bedside before embarking any statements to the caregivers. Moreover, students of health sciences shall be taught and trained on these bedside clues to differentiate true brain dead from pseudo ones or LIS.

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References

1. Agarwal S, Kaeley N, Khanduri S, Kishore N. Brain dead presentation of snake bite. Indian J Crit Care Med 2018;22(7):541–543. DOI: 10.4103/ijccm.IJCCM_318_17.
2. Senthilkumaran S, Balamurugan N, Nath Jena N, Thirumalai kolundusubramanian P. Locked-in syndrome in post snake bite: can it be unlocked? Trop Doct 2018;48(3):257. DOI: 10.1177/0049475518755274.
3. Senthilkumaran S, Balamurugan N, Menezes RG, Thirumalai kolundusubramanian P. Snake bite and brain death-cause for caution? Am J Emerg Med 2013;31(3):625–626. DOI: 10.1016/j.ajem.2012.11.033.
4. Senthilkumaran S, Ananth C, Menezes RG, Thirumalai kolundusubramanian P. Snake bite and brain death–handle with care. Indian J Anaesth 2015;59(5):333. DOI: 10.4103/0019-5049.156906.
5. Sethi PK, Rastogi JK. Neurological aspects of ophitoxemia (Indian krait)–a clinico-electromyographic study. Indian J Med Res 1981;73:269–276. PMID: 7239611