



Ophitoxaemia and Role of Radiological Imaging

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I. BACK-GROUND

- OPHITOXAEMIA-Clinical spectrum of snake bite envenomation.
- India is known as snake bite capital of the world.
- Snakebite is classified as a priority neglected tropical disease by World Health Organisation.
- Annually more than 2500000 to 3000000 snake bite cases are reported in India including neurotoxic, vasculotoxic and myotoxic varieties. More often it is seen in rural India

during monsoon and in construction sites in urban areas. Morbidity and mortality occurs in great number of cases with intracerebral and neuromuscular complications. Radiologic imaging has a limited but pivotal role in case of diagnostic dilemma and in prolonged neurological complications.

- Categories of snakes
- Elapidae- Neurotoxic snake



Cobra



krait

CATEGORIES OF SNAKES

Viparidae- Vasculotoxic

Russel viper

cobra

Hydrophidae- musculotoxic



Sea snake



COMPOSITION OF SNAKE VENOM

ELAPIDAE:

- ▶ Neurotoxin
- ▶ Cholinesterase
- ▶ Phosphatidases

Lamprophidae - burrowing asps



- ▶ Proteases
- ▶ Hyaluronidases
- ▶ Ribonucleases
- ▶ Thromboplastins
- ▶ Fibrinolysin
- ▶ Proteolysin
- ▶ Cardiotoxins
- ▶ Phospholipase

VIPARIDAE

- ▶ Haemorrhagin
- ▶ Haemolysin
- ▶ Lecithinase
- ▶ Protease
- ▶ Cytolysin
- ▶ Hyaluronidase
- ▶ Leucolysin
- ▶ Thromboplastin
- ▶ Phospholipasea
- ▶ Proteinase
- ▶ Metalloproteinases

II. MATERIALS AND METHOD

- Hospital based prospective study

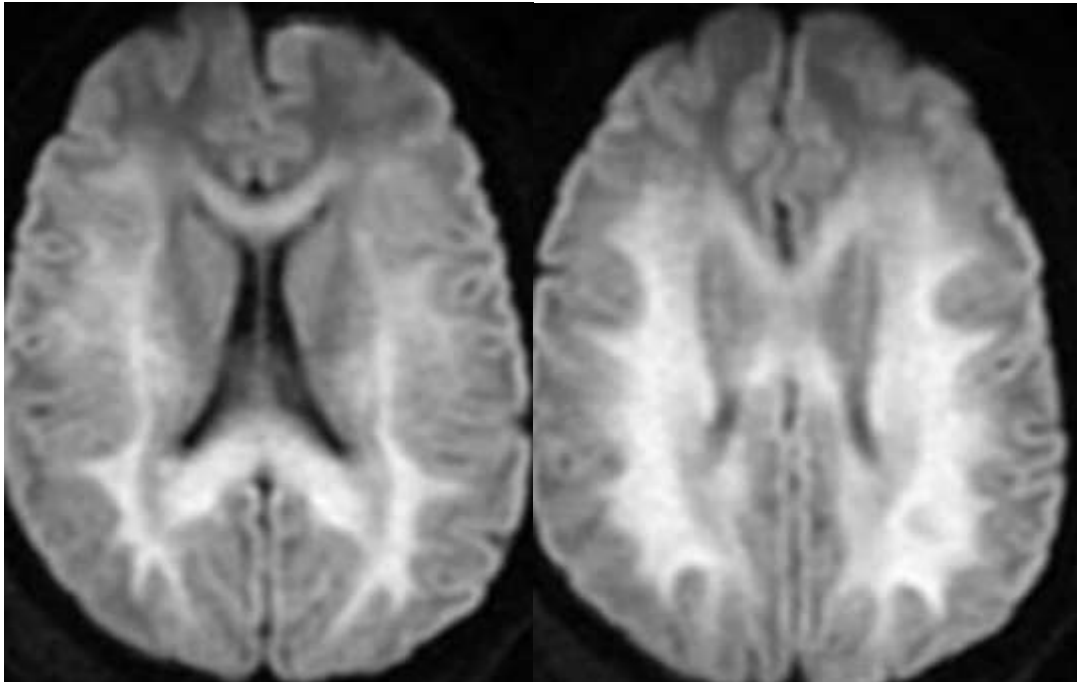
- Study period-July 2022 to August 2023.
- Haematological investigations: Hemogram, Platelet count, WBC, Sr. Creatinine, Sr Creatinine phosphokinase, BT, CT,PT ,Aptt, Protein c and s , antithrombin III, D-dimer
- Radiological investigations-Computed Tomography- Magnetic Resonance Imaging- GE Signa Creator 1.5T Ultrasonography-Samsung HS70A
- Number of snakebite cases reported to casualty during this period is 123.
- Out of 123 patients, only 37 cases are admitted to the hospital.
- Out of 37 cases admitted, 09 cases developed neurological, Vascular and other systemic complications.

IMAGING OBSERVATIONS :-

- Xray- limited use, to detect foreign body, to rule out osteomyelitis in case of cellulitis
- Ultrasonography- only for local inflammation at site of bite like swelling, hyperaemia, cellulitis, compartment syndrome.

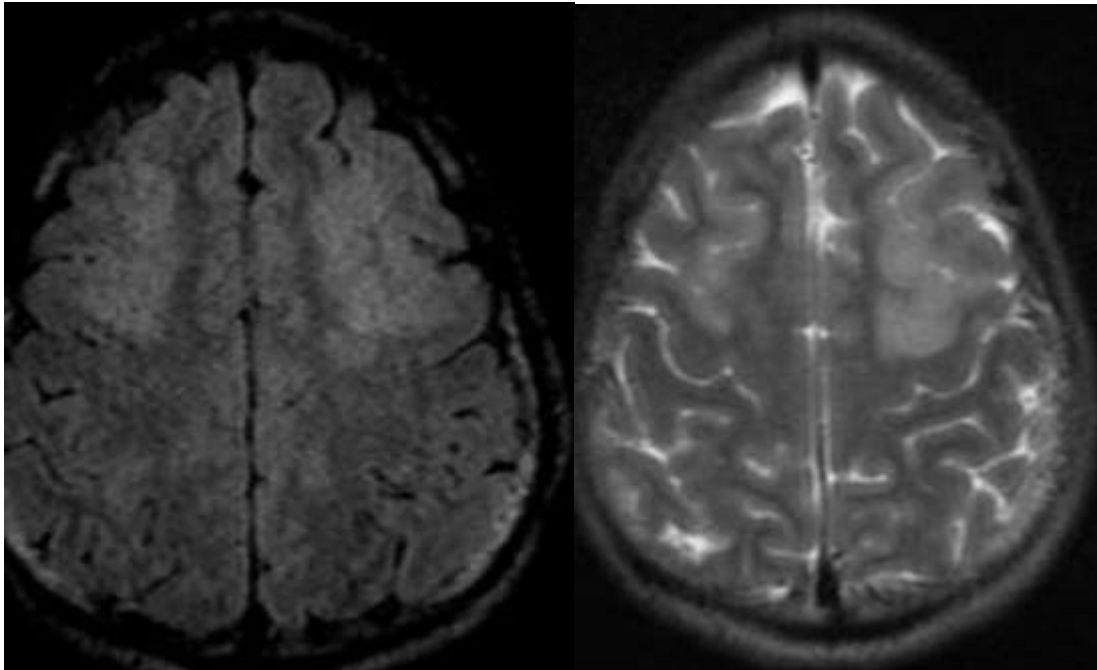


IMAGING : ALTERED SENSORIUM WITHIN TWO WEEKS OF SNAKEBITE WITHOUT RESPIRATORY FAILURE



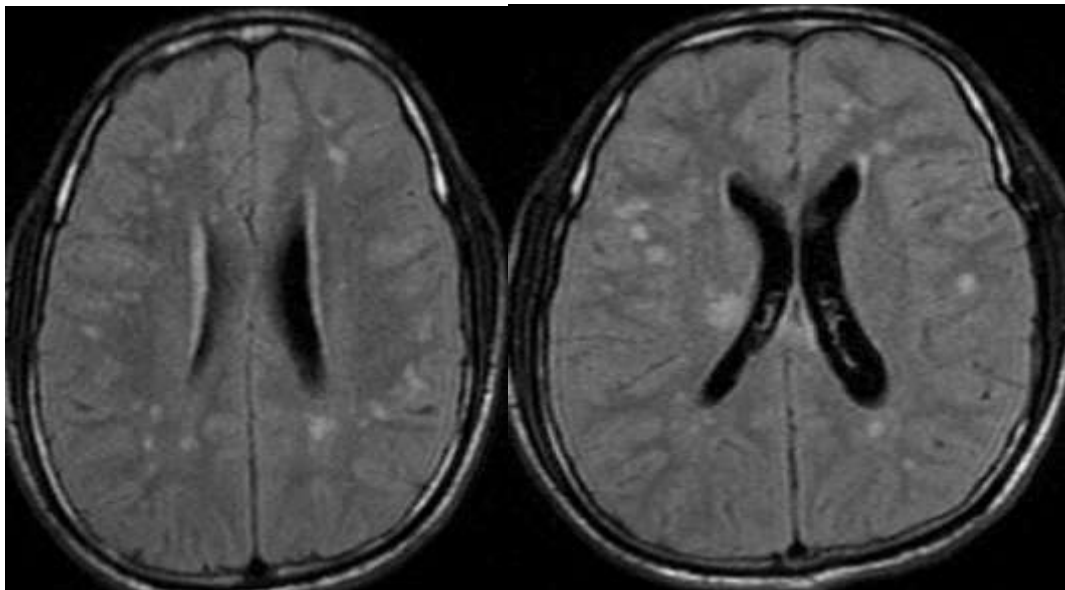
Bilateral symmetrical T2 hyperintensities in CGR, corona radiata and corpus callosum which shows diffusion restriction. Due to delayed complication in snake bite induced leukoencephalopathy.

SUDDEN ONSET OF ALTERED SENSORIUM TWO MONTHS AFTER SNAKE BITE



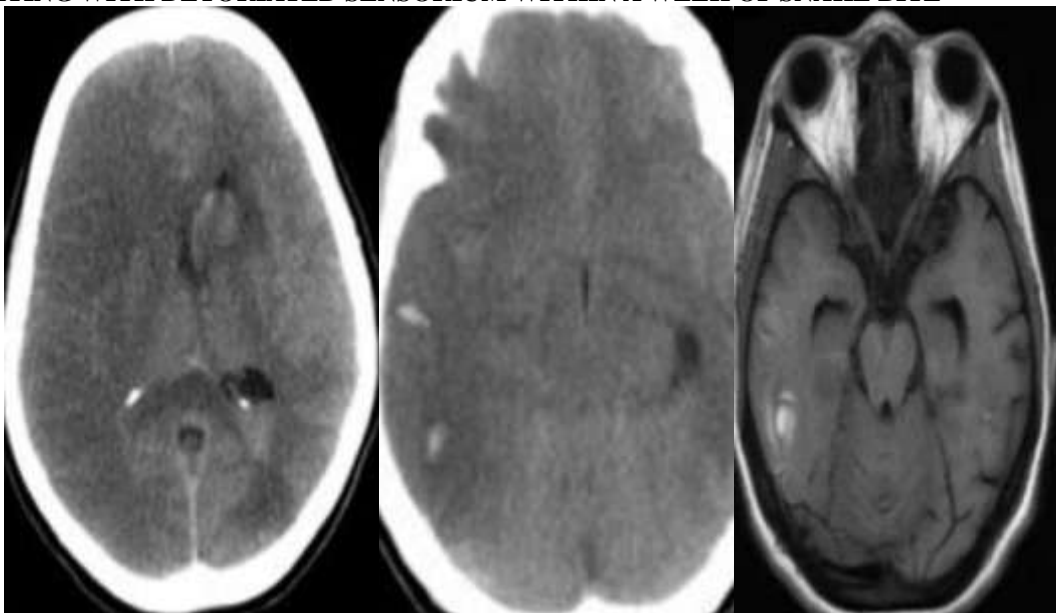
T2 hyperintensities in b/l CG and right frontoparietal and left temporal area with evidence of mild diffusion restriction. due to ASV induced immunological reaction.

ALTERED SENSORIUM AFTER THREE MONTHS OF SNAKE BITE



Multiple small T2/FLAIR hyperintensities in b/l subcortical paraventricular area with some showing diffusion restriction due to late complication of ASV.

VOMITING WITH DETORiated SENSORIUM WITHIN A WEEK OF SNAKE BITE

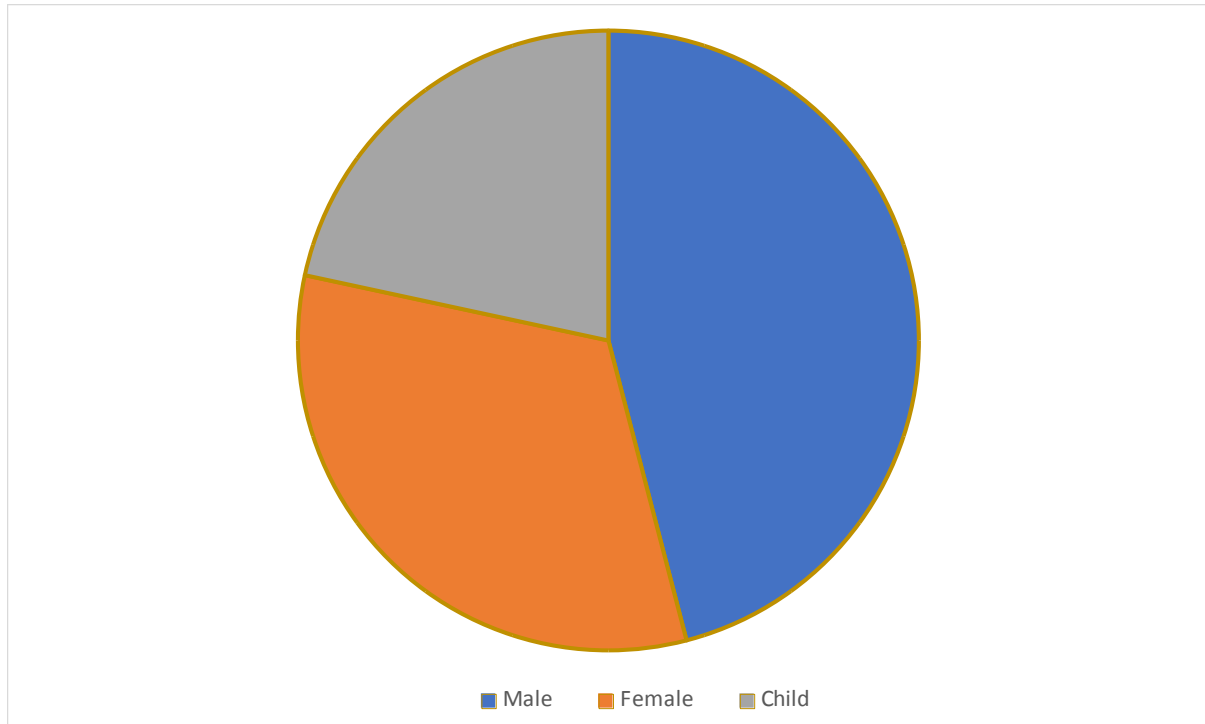


Petechial haemorrhage in rt temporoparietal area with intraventricular bleed. due to consumption coagulopathy

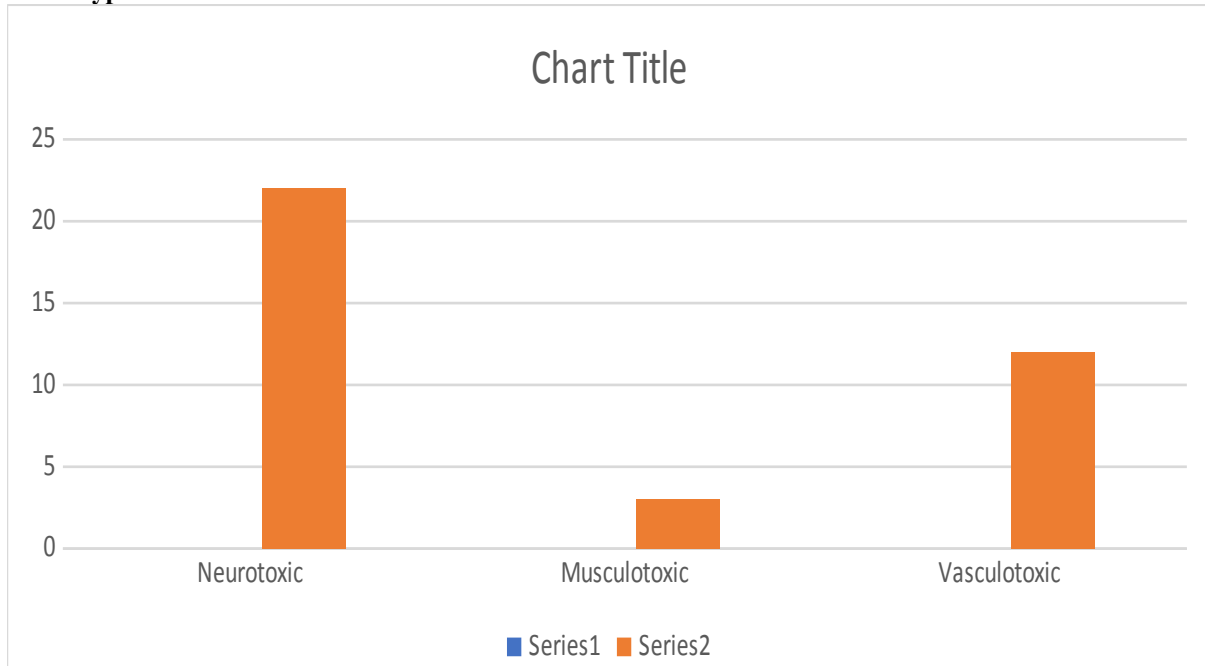


III. RESULT

Gender wise Distribution

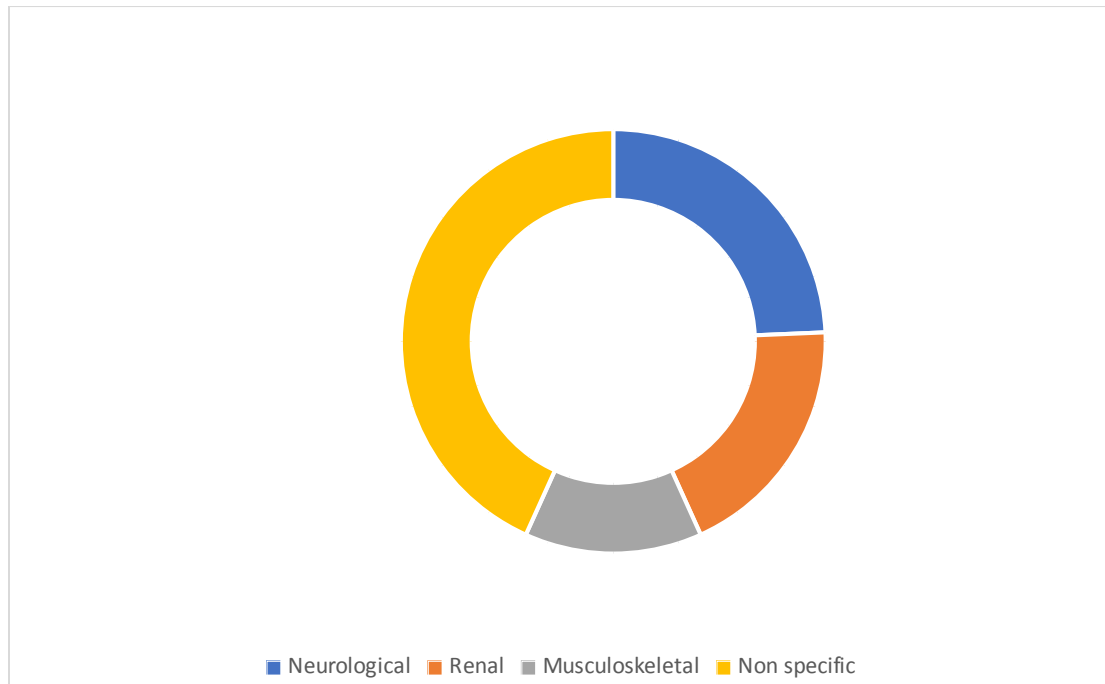


Snake type distribution

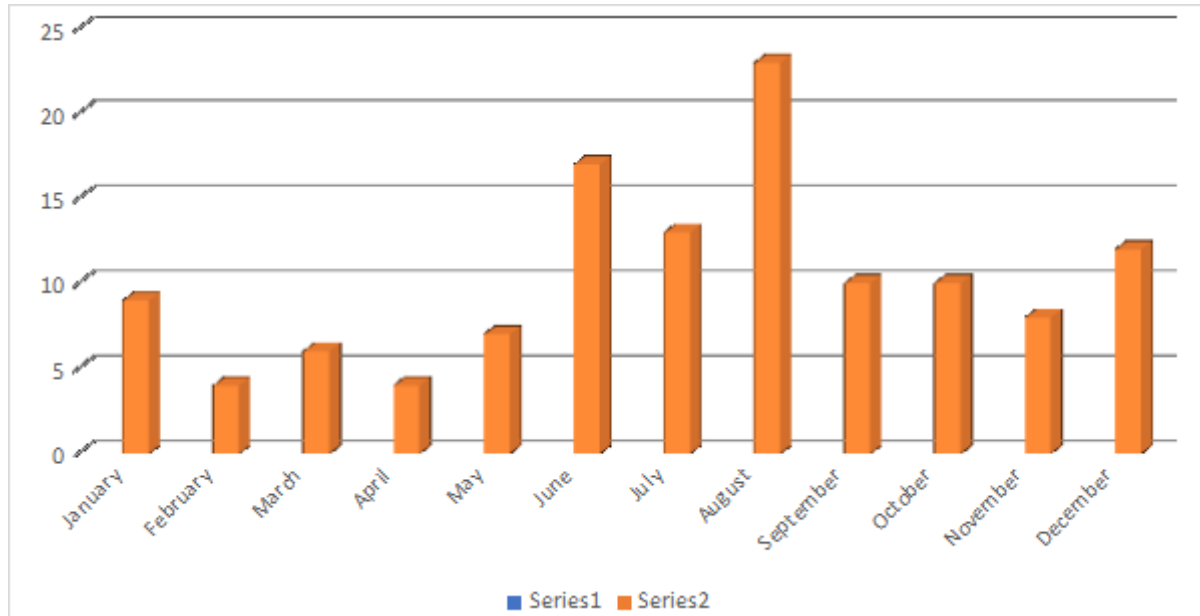




Complication distribution



Month wise distribution



IV. DISCUSSION:

In snake bite cases imaging plays an important role where there is diagnostic dilemma in following situation

- ▶ Neurological deficit persists
- ▶ Acute alteration of sensorium
- ▶ Recurrent neurological symptoms
- ▶ Unexplained symptoms

- ▶ Aggravated and nonhealing ulcers at snake bite site
- ▶ Complications due to involvement of other organs like Acute kidney injury, acute respiratory distress syndrome.



V. CONCLUSION

Imaging has limited role in snake bite cases but plays an important contribution in cases with acute and delayed central neurological manifestation of neurotoxic envenomation, coagulopathy effect in brain, abdomen and other organs and systemic complications for diagnosis and further management.