

Diagnostic Value of Pupillometry in the Setting of Pentobarbital-Induced Burst-Suppression Coma

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INTRO

- The neurological exam is crucial in ICU patients who have sustained neurological injury
- Early signs of neurological deterioration can be masked by pentobarbital
- Automated pupillometry and use of the Neurological Pupil Index (NPI) is shown to increase sensitivity and consistency when compared to neurological examination alone.
- Hypothesis: the Neurological Pupil Index (NPI) is a good indicator of cerebral function even when EEG was suppressed from a pharmacologically induced, specifically pentobarbital, coma

METHODS

- ◆ Collected hourly Pupillometry and EEG data on 3 consecutive patients in pentobarbital coma admitted to a NeuroICU
- ◆ Pupil size, reactivity, and neurological pupil index (NPI) were measured and recorded using the NPi-200 Pupillometer system developed by Neuroptics.

Results:

- In all 3 patients, the pupillary reactivity, as assessed by NPI was:
 - 1.) Preserved, though diminished, at different pentobarbital doses
 - 2.) Persists even in the presence of near isoelectric EEG patterns.

Conclusion:

Pupillary reactivity is independent of pharmacological influences as demonstrated by automated pupillometry



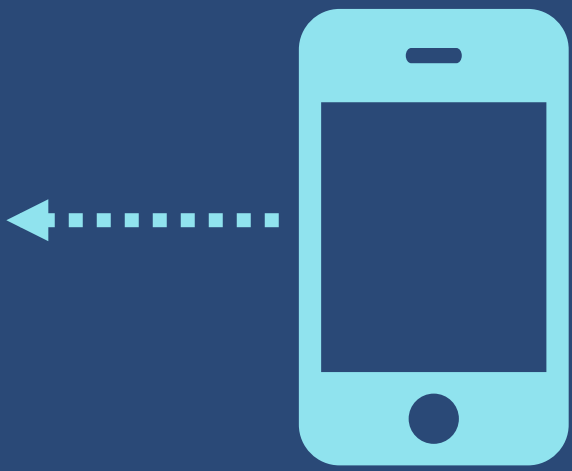
Pupillary reactivity is a robust part of the neurological exam and is independent of pharmacological influences.



NPi-200 Pupillometer system developed by Neuroptics.



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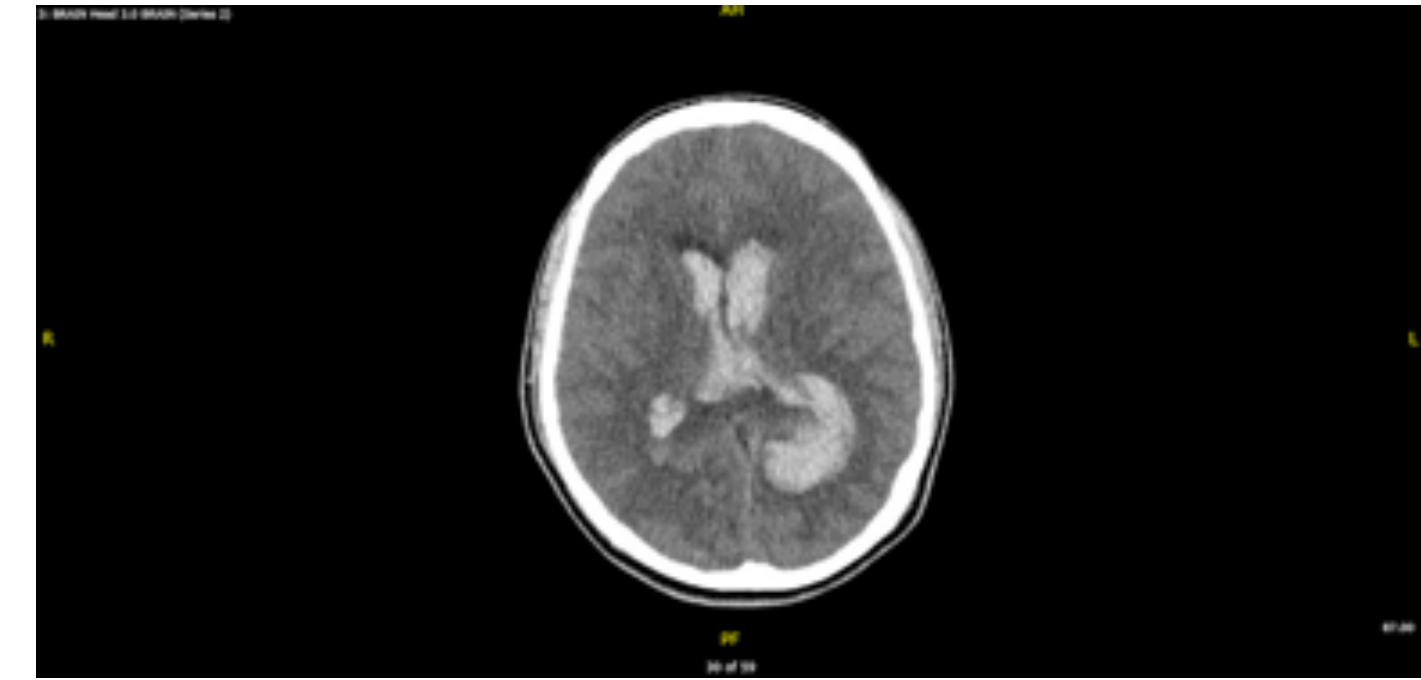


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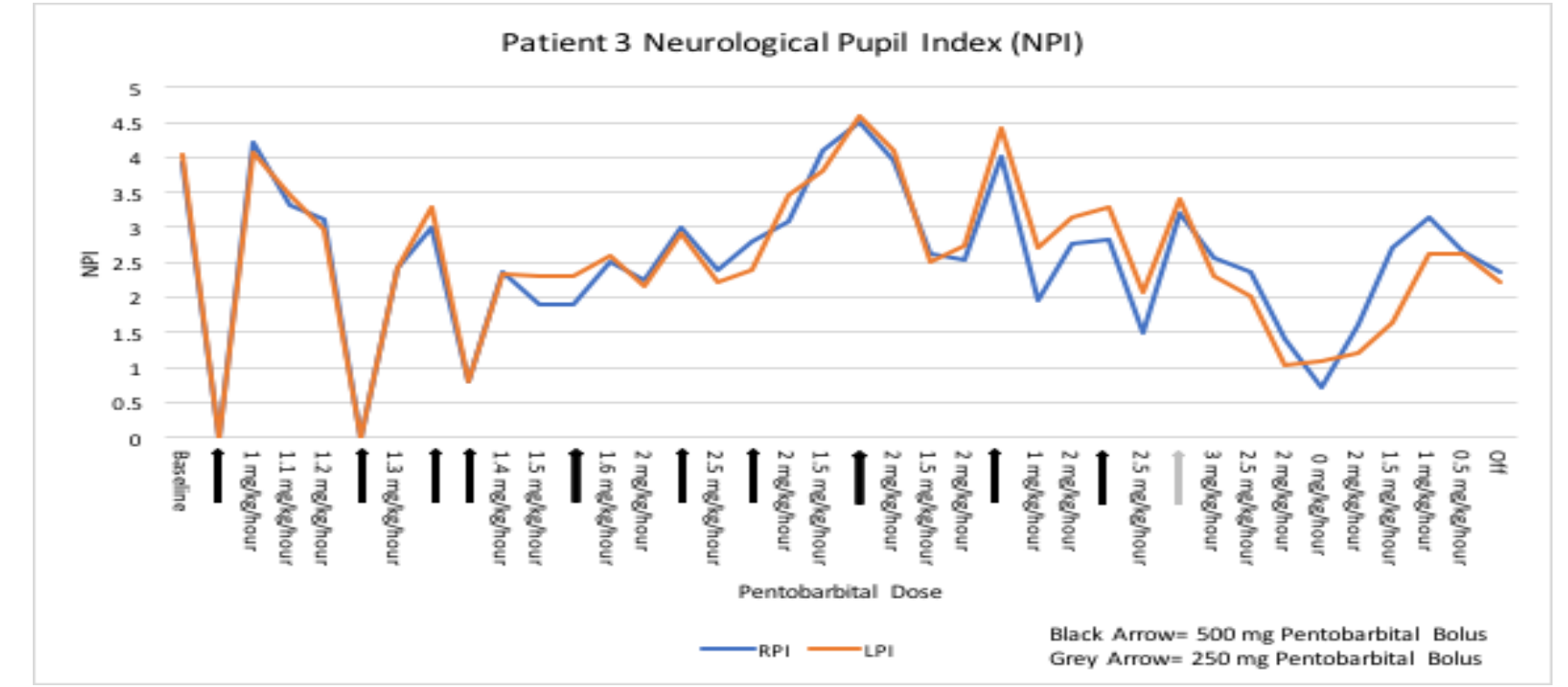
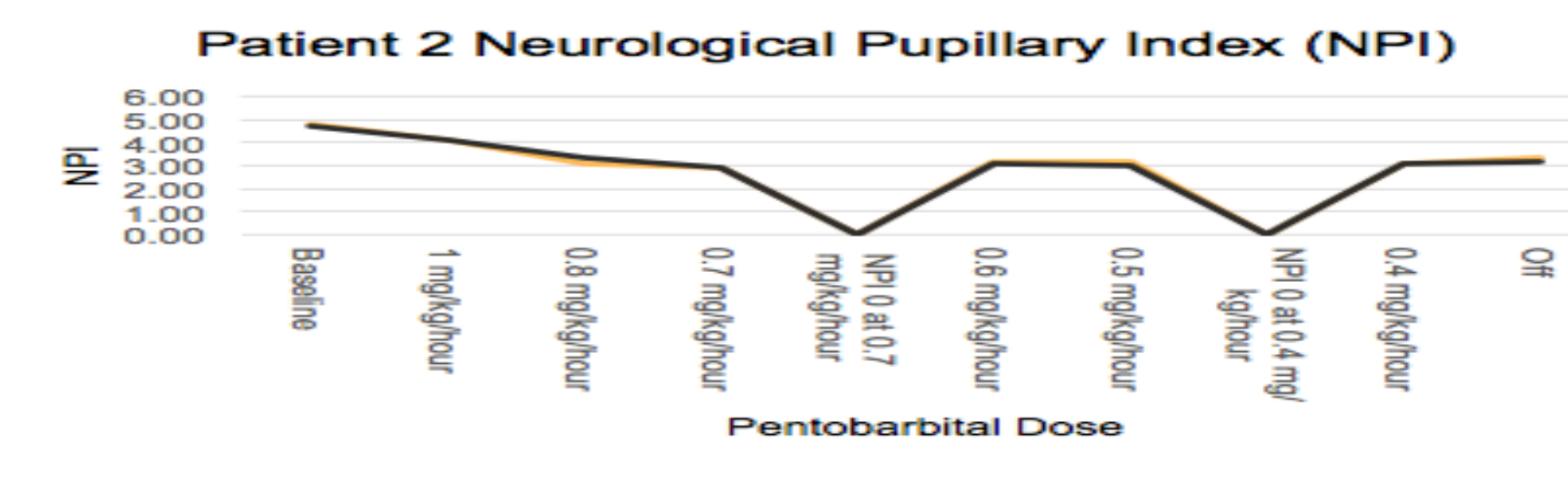
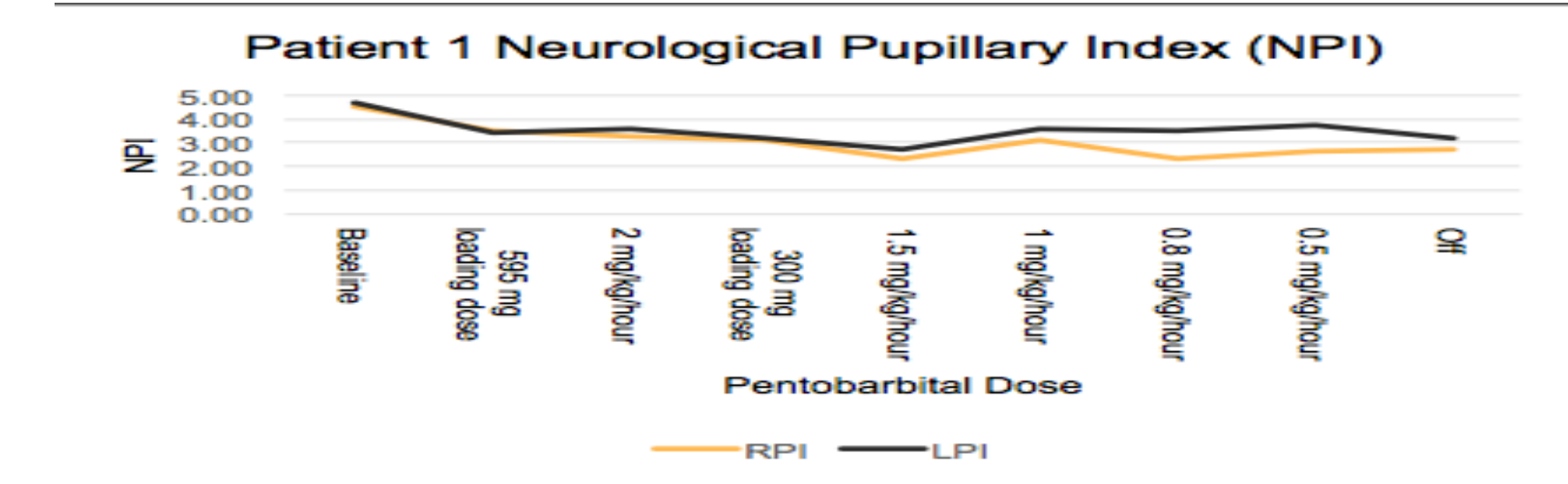
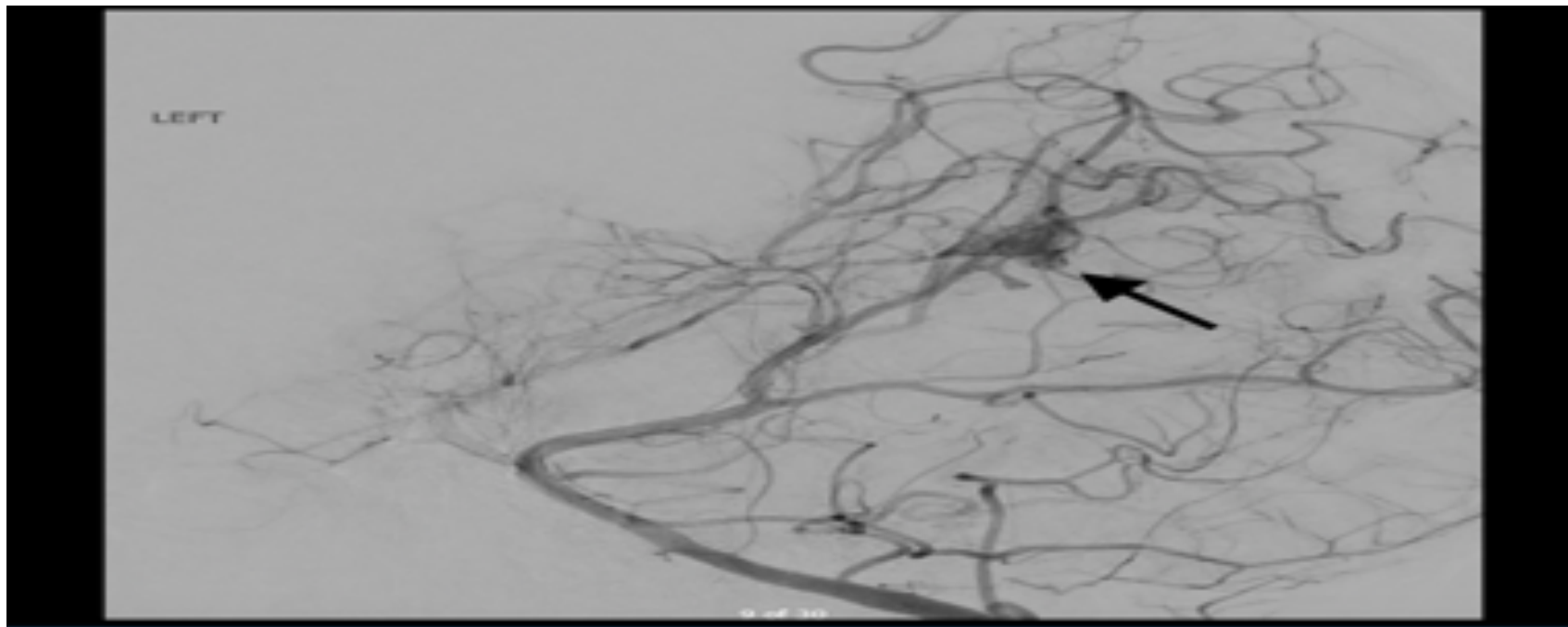


Patient	Age (years)	Diagnosis	Indication for PC
1	19	Ruptured AVM	Control of refractory elevated ICP
2	50	Aneurysmal SAH	Control of refractory elevated ICP
3	19	Generalized Convulsive SE	Treatment of refractory SE

TABLE 1:Summary of Patient Age, Admitting Diagnosis, and Indication for Pentobarbital Coma
*AVM= arteriovenous malformation, SAH= subarachnoid hemorrhage, SE= status epilepticus, PC = pentobarbital coma, ICP= intracranial pressure



Patient 1 NCHT



DISCLOSURES

- None

REFERENCES:

Andrefsky, J. et al (1999). The Ciliospinal Reflex in Pentobarbital Coma. J Neurosurg 90 (644-646).