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HYDROXOCOBALAMIN AS A RESCUE THERAPY FOR NIMODIPINE-INDUCED SEVERE REFRACTORY VASOPLEGIA

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INTRODUCTION: Cerebral vasospasm is a serious complication after aneurysmal subarachnoid hemorrhage (aSAH) leading to secondary neurologic injury. Nimodipine is the only FDA approved medication to reduce poor neurological outcomes after aSAH. Mild systemic hypotension is frequently seen with nimodipine, although severe refractory shock is rare. We present a case of refractory vasoplegia and severe shock after first dose of enteral nimodipine (60 mg), which responded only to hydroxocobalamin (B12) administration.

DESCRIPTION: 59 yo F presented with a sudden onset severe headache. CTH/ CTA showed aSAH due to ruptured Posterior Communicating (PCOMM) artery aneurysm. Worsening hydrocephalus prompted placement of an external ventricular drain. She underwent a frontal craniotomy and L PCOMM clipping. After stabilization in the Neuro-ICU, oral nimodipine (60 mg) was started per aSAH management. Within 30 minutes of the first dose, MAP dropped to 47 mmHg. Fluids and norepinephrine were started. Her MAP remained low (50s) despite escalating doses of norepinephrine and addition of epinephrine and vasopressin. Bedside POCUS showed no cardiac abnormalities or other etiologies of shock. Despite maximum doses of 3 vasopressors, her MAP remained low. She was administered IV B12 as reversal for suspected nitric oxide vasodilation. Within an hour, vasoactive medications were quickly weaned off. A rechallenge of nimodipine was attempted the next day (30 mg) which again precipitated severe vasoplegia. B12 was administered again with almost instantaneous improvement in her MAP. Nimodipine was discontinued and no additional episodes of severe vasoplegia occurred.

DISCUSSION: There is little evidence to guide management of severe vasoplegia due to nimodipine. We describe the first case of nimodipine induced refractory vasoplegia that recurred upon rechallenge with lower dose of nimodipine. Although other etiologies of shock must be ruled out, Intensivists should consider B12 as a lifesaving reversal agent for suspected vasoplegia due to nimodipine.

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GRADE 3 DAI IN TBI DOES NOT PREDICT NEED FOR TRACHEOSTOMY, GASTROSTOMY, OR DISCHARGE OUTCOME

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INTRODUCTION: Diffuse Axonal Injury (DAI) on MRI, graded by topographic severity from Grade 1 to 3, is a common finding in traumatic brain injury (TBI). The relationship between DAI severity and need for tracheostomy (trach) and percutaneous endoscopic gastrostomy (PEG) in TBI is unknown. We compare the rates of trach/PEG and ICU discharge outcomes in severe TBI (sTBI) patients with DAI-3 vs. no DAI/DAI 1-2.

METHODS: This is a retrospective cohort study (10/2022-6/2023) of the UCI Neurology TBI & Concussion Program Database, including all standardized consultations for sTBI at a tertiary Level 1 Trauma Center (consult criteria: severe TBI (GCS < 8), invasive neuromonitoring, complex TBI per SICU). DAI grade was extracted from radiology report and confirmed by authors. Patients without an MRI brain were excluded.

RESULTS: A total of 30 patients met inclusion criteria with 40% found to have DAI-3 on MRI. There was no demographic difference in patients with or without MRI. DAI-3 patients had significantly lower median admit GCS (4 [IQR 5-13] vs 7 [3-8], p= 0.031) versus non-DAI-3. There were no significant differences in rate of trach & PEG (43% vs 37%, p=0.754) or PEG tube alone (14 % vs 6 %) between survivors with DAI-3 vs non-DAI-3. We found no significant difference in mortality (41% vs. 11%, p= 0.13), median discharge GCS (12.5 [IQR 9-14 vs 12 [9.5-14], p=0.78]), length of stay (15.5 days [IQR 11- 27] vs 18.0 [IQR 9-29] p=0.94), neurosurgical rate (41% vs 50%, p = 0.12), or discharge location to skilled nursing facility (33% facility vs 55%, p= 0.26) between DAI-3 vs. non-DAI-3, respectively.

CONCLUSIONS: DAI grade 3 compared to no DAI/grade 1-2 does not predict higher likelihood of obtaining a trach or PEG during hospitalization or worse outcome with regard to mortality, GCS, length of stay, or disposition location. This preliminary study suggests DAI grade should not be used in isolation for prognostication. Future studies will focus on assessing subgroups such as those greater than 65 years old, mechanism of injury, and individual burden of TBI to help improve prognostication for TBI patients.