



## Title:

### **A Case of Hemiplegia Vegetativa Alterna, Paroxysmal Sympathetic Hyperactivity and Ogilvie's Syndrome: The Role of Central Sympathetic Pathways in their Pathophysiology**

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## Abstract:

Hemiplegia vegetativa alterna (HVA) is the clinical syndrome of contralateral hemiparesis, hemisensory loss, hemihyperhydrosis and ipsilateral Horner's syndrome<sup>1,2</sup>. The term vegetativa alterna denotes that a single brainstem lesion manifests with ipsilateral and contralateral, i.e. crossed, signs of autonomic ("vegetative") sympathetic nervous system dysfunction. Fewer than five cases have been reported and most were a result of stroke involving the occlusion of posterior cerebral artery (PCA) perforators that supply the anterolateral mesencephalon<sup>1-3</sup>.

We describe a 46 year old male who suffered from aneurysmal subarachnoid hemorrhage and exhibited HVA as a consequence of mesencephalic injury. The patient also experienced paroxysmal sympathetic hyperactivity (PSH) and recurrent colonic pseudo-obstruction, known as Ogilvie's syndrome. PSH is identified as a pathological state of elevated sympathetic activity characterized by episodic tachycardia, hypertension, tachypnea, hyperthermia diaphoresis and decerebrate dystonia occurring in 10% of severe traumatic brain injury patients<sup>4</sup>. Although the pathogenesis has yet to be elucidated the excitatory-inhibitory ratio (EIR) disconnection theory postulates that certain brainstem centers are inhibitory in nature and when severely injured, the spinal cord is released from higher regulation leading to sympathetic hyperactivity<sup>5</sup>. Colonic pseudo-obstruction is a gastro-intestinal emergency with brain injury accounting for 10% of cases<sup>6,7</sup>. It is understood that sympathetic hyperactivity also plays an important role in its pathophysiology<sup>7</sup>.

To our knowledge this is the first documented case of HVA, PSH and colonic pseudo-obstruction in the literature. We propose that the three conditions are related to an interruption of central sympathetic pathways and present clinico-radiological evidence to demonstrate that focal lesions of the anterolateral mesencephalon can account for this unique presentation.