

Stellate Ganglion Block Attenuates Cerebral Vasospasm after Aneurysmal Subarachnoid Hemorrhage in the Setting of Moyamoya Disease

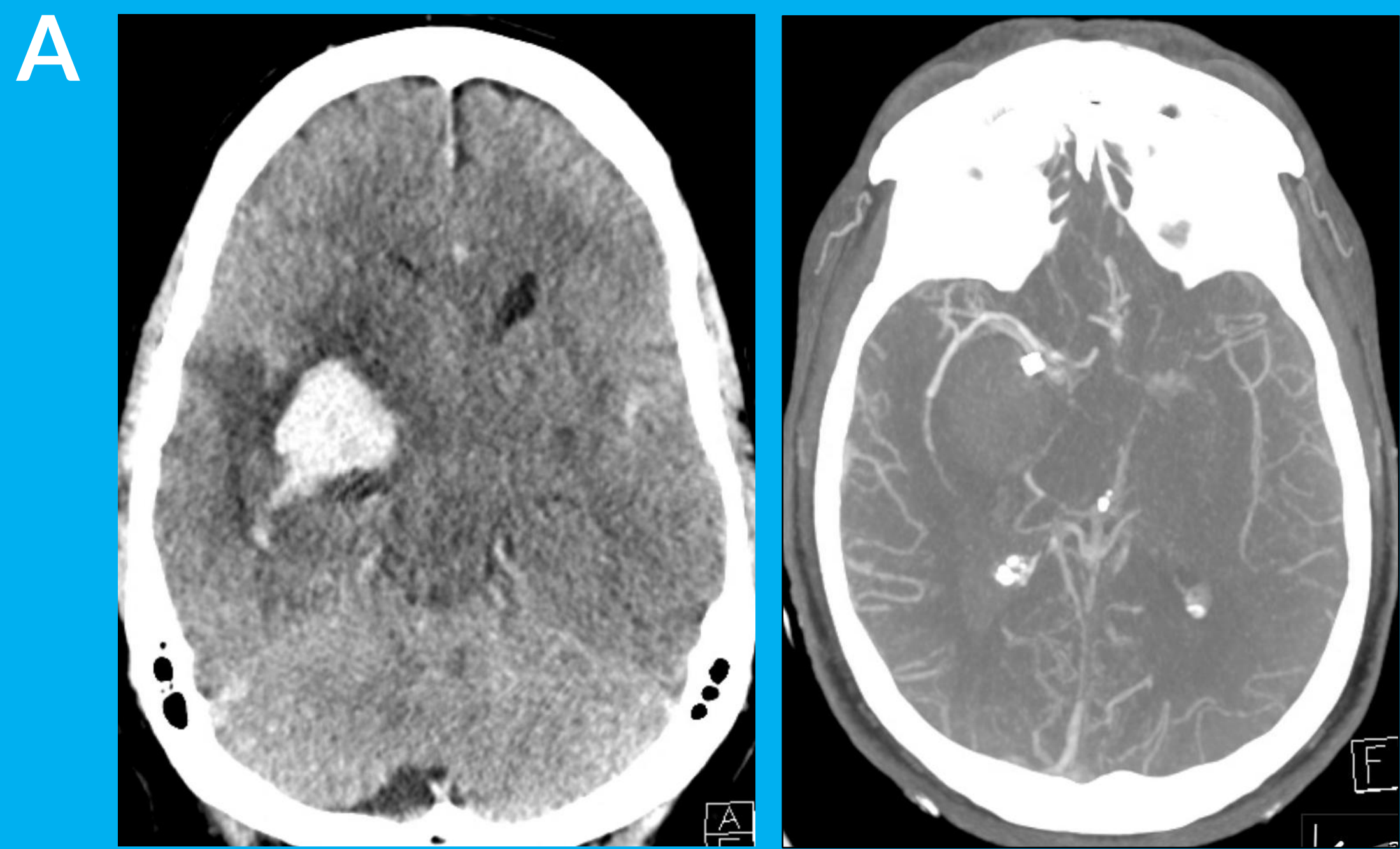
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BACKGROUND: Cerebral angiographic vasospasm occurs in approximately 40% of patients with aneurysmal subarachnoid hemorrhage (1), often leading to delayed cerebral ischemia and poor clinical outcomes. While conventional management strategies include hemodynamic augmentation, calcium channel blockers, and endovascular interventions (2), the stellate ganglion block (SGB) has emerged as a safe, potential adjunct therapy due to rapid, potent modulation of sympathetic tone and reduced mean cerebral blood flow velocity (3,4). SGB can reduce the systemic drug burden and delay/avoid the need for surgical intervention in a minimally invasive manner.

METHODS: Clinical data were obtained through review of the electronic medical record and bedside observations during the patient’s hospitalization.

RESULTS: A **52-year-old male** with a past medical history of Moyamoya disease and hypertension presented with headache, nausea, and vomiting. Head CT revealed a right temporal intracerebral hemorrhage with vasogenic edema and a **subarachnoid hemorrhage stemming from a ruptured right middle cerebral artery (MCA) aneurysm**, resulting in a stable leftward midline shift, medial deviation of the right uncus, and right greater than left sulcal effacement. The pain service was consulted for a **stellate ganglion block after identification of vasospasm and hyperemia of the right MCA**. A right-sided stellate ganglion block with **9 cc of 2% lidocaine and 1 cc of 10 mg dexamethasone** was injected under ultrasound guidance at the bedside, and no immediate complications or adverse reactions were noted. The following day, no evidence of significant vasospasm in the anterior or posterior circulation was noted during angiogram.

Ultrasound-guided stellate ganglion block can attenuate cerebral vasospasm associated with subarachnoid hemorrhage in a patient with **Moyamoya disease**, emphasizing a role for these blocks in patients with underlying **severe vaso-occlusive disease**.

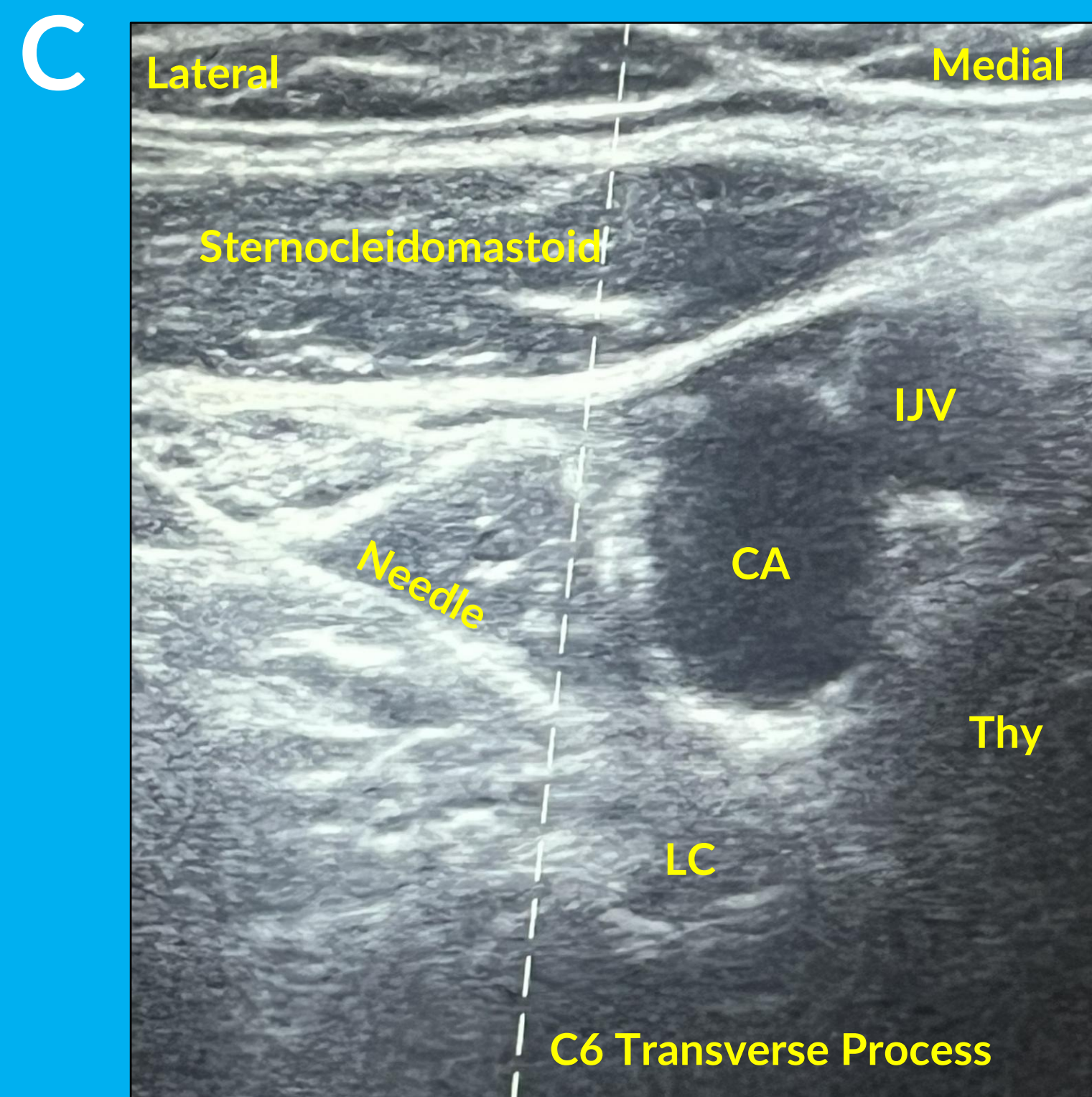


(L) CT w/o contrast demonstrating right temporal hemorrhage with SAH. (R) CT w/ contrast showing mild focal stenosis of the origin of the right M1 segment.

B

RIGHT						Vessel
Time	PSV (cm/s)	EDV (cm/s)	PI	DEPTH (mm)	MEAN (cm/s)	
09:30:58 AM	116	54	0.83	52	75	MCA
09:35:08 AM	147	59	1.00	54	88	MCA
09:42:14 AM	216	108	0.75	56	144	MCA
09:42:03 AM	234	109	0.83	58	151	MCA
09:41:00 AM	201	108	0.67	60	139	MCA
09:44:43 AM	-259	-169	0.45	67	-199	ACA
09:41:34 AM	187	96	0.72	63	126	TICA
09:46:00 AM	-85	-39	0.85	64	-54	VERT
09:46:07 AM	-93	-45	0.79	69	-61	VERT
09:45:16 AM	-47	-23	0.77	50	-31	ICA
Lindegard Ratio: 4.87						

Transcranial Doppler summary showing elevated RMCA velocities with Lindegard ratio >3, consistent with moderate vasospasm (peak systolic velocity 234 cm/s, end diastolic velocity 109 cm/s, mean velocity 151 cm/s at 58 mm depth).



Ultrasound image demonstrating needle placement targeting the fascial plane between the prevertebral fascia and the anterior surface of the longus colli muscle.

CA = carotid artery
IJV = internal jugular vein
LC = longus colli
Thy = thyroid



Angiogram showing a dysplastic M1 segment underlying the previously treated aneurysm with no significant vasospasm observed.



DISCUSSION: In this case, ultrasound-guided SGB was associated with **resolution of right MCA vasospasm without immediate complications**, consistent with prior reports. Although a prior case report suggested that SGB was ineffective at enhancing cerebral perfusion in a patient with moyamoya disease (5), our case demonstrates a role for SGBs in attenuating post-SAH vasospasm in patients with underlying severe vaso-occlusive disease. This case adds to the growing literature supporting SGB as a safe and effective procedure in the emergent setting and **highlights the need for randomized, prospective studies** to define its role in vasospasm management.

References:

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