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Letter to the Editor For: "The Successful Use of Bilateral 2-Level Ultrasound-Guided Stellate Ganglion Block to Improve Traumatic Brain Injury Symptoms: A Retrospective Analysis of 23 Patients"

Mulvaney et al. tested the hypothesis that bilateral "stellate ganglion block" (SGBs) performed on subsequent days improved traumatic brain injury (TBI) symptoms through the improvement of cerebral blood flow. The data were obtained via retrospective chart review for the time period between August 2022 and February 2023 to identify patients who received bilateral, 2-level (C6 and C4) "SGBs" for Post Traumatic Stress Disorder (PTSD) symptoms but who also had a history of TBI. Neurobehavioral Symptoms Inventory (NSI) scores were collected at baseline, at 1 week, and at 1 month post-treatment in 14 males and 9 females. The results demonstrated the following: Out of 23 patients, 22 showed improvement in their NSI scores. NSI baseline average score was 42.7; the average score at 1 week post-treatment was 18.8, and at 1 month post-treatment was 20.1. This represents a 53% improvement in the NSI score between baseline and 1 month. Those are similar findings found in our practice as well; thus, I salute his dedication to report this important finding. I do want to clarify the origin for 2-level cervical sympathetic injection (CSI). This approach was originated by Dr Eugene Lipov on a patient with severe PTSD that did not respond to SGB but did respond to superior cervical ganglion (SCG) blockade. This was then followed by Dr Mulvaney's 2020 report of CSI improved efficacy versus SGB.

Cervical sympathetic injection is the term that was introduced in 2022 by Dr Lipov to differentiate a C6 and C4 sympathetic ganglion injection that targets stellate cervical ganglion (SGB) located at C7 and T1 level, as well as SCG located at C3 level. The reason for C6 and C4 as injection sites is because of the limitation of ultrasound guidance for needle placement due to the jaw obstruction of transducer placement and the spread of local anesthetic during the injection a few levels above and below placement. We believe the use of the term SGB as a general term for cervical sympathetic blockade is imprecise and confusing.

In the discussion section of the article, Dr Mulvaney references the works of Dr Kims and Dr Laan. Both of their research focuses on SGB's mechanism of action on cerebral blood flow. We believe that is not the case, since to the best of our knowledge, no data exist that supports the fact that transient increases of the blood flow will improve TBI/PTSD symptoms. The report by Dr Yang et al., sited by Dr Mulvaney, discussing the alterations in plasma NF-κB and inflammatory factors in 25 patients treated with SGB for TBI versus 25 patients in their control group, is closer to the explanation of the effect seen. Dr Lipov's 2020 article, reviewing SGB impact on the immune system, reports the direct neural connection from Stellate Ganglion to the thymus and bone marrow, and the effects of SGB changing the T cell counts, T-killer cells, and the reduction of IL-6.

Dr Jian Zhang reported in 2021 that early brain injury (EBI) due to subarachnoid hemorrhage (SAH) leads to increase in EBI markers (including IL-1β, IL-6, TNF-α, ET-1, NPY, NSE, and S100β). The inflammatory marker increase was reversed by SGB, as well as was the prognosis of SAH. Immune response modulation can be seen systemically following SGB.

Dr Shiyun Dai in 2024 reported SGBs' efficacy to attenuate experimental lung injury by decreasing the secretion of IL-1β and IL-6 and increasing the secretion of IL-10. Meanwhile, SGB was found to inhibit the production of reactive oxygen species (ROS) and CYP-D, and enhance the activities of T-SOD, Mn-SOD, and CAT. Furthermore, SGB upregulated Sirt3 and downregulated JAK2/STAT3 and NF-κb p65 phosphorylation, CIRP, and NLRP3. In summary, the term SGB should be changed to CSI when a dual injection is being performed . Further, the marked impact of CSI on TBI is likely due, at least in part, to systemic immune modulation. CSI should be investigated as a viable approach for immune-mediated conditions.

References are available from the author upon request.

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