Insight Medical Publishing

JOURNAL OF TRANSLATIONAL NEUROSCIENCES

Contrast Spread Technique: Algorithm and Study

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Abstract

Contrast Spread Technique (CST) is a new and evolving method for epidural space recognition. It is based on the interpretation of the radiological images and possesses some theoretical advantages over the conventional loss of resistance (LOR) technique. Unlike the LOR technique, which relies on the subjective feeling of the performing physician, the CST technique allows for objective verification of the needle tip location inside or outside of the epidural space by visual assessment of the contrast spread that may also be observed and interpreted by the third party. By putting the emphasis on the analysis of resulted radiological images instead of relying on the tactile sense of resistance, it may improve the accuracy of the needle placement and improve the safety of the epidural injections by preventing dural penetration. I safely performed more than 1500 injections with CST and, together with my coworkers, created an algorithm for performing cervical ESI with this technique. I also performed an IRB approved study (Canadian SHIELD, 07/18/19) where both techniques were compared. Cervical ESI was performed with either 18G or 25G needle, with 20 patients in each group. In both groups, 95% Confidence Interval for the proportion of epidural space detection was significantly less for LORT. There was also a significant difference between the proportions of detection of epidural space confirmed by LORT using 18G needle and 25G needles: 60% vs. 10%. Epidural space recognition was 100% for CST in both groups. Discussion & Conclusion: In both groups, CST was superior to LORT in epidural space recognition. Although it is understandable for 25G group, it is unclear why in 18G group visual recognition of the contrast spread came before the tactile loss of resistance. Further studies are warranted to explore a new technique.

Biography

Yakov Perper was born in Uzbekistan in 1962, graduated from Tashkent Medical School in 1985, immigrated to the United States in 1996 and completed his anesthesia residency at Maimonides Medical Center in Brooklyn. Throughout his professional career, he developed a special interest in cervical epidural injections. Besides creating two inventions on how to safely perform cervical injections in the sitting position, he also discovered a new way of epidural space identification and named it Contrast Spread Technique (CST). He published several articles and presented on CST at different conferences: London Pain Forum Winter Symposium (2015, 2016, 2017 and 2020), at the New York State Pain Society ASM (2017), and the British Pain Society ASM (2018). In addition to my accomplishments in the field he loves, one of his biggest joys is his wife, three daughters, and newborn grandchild. He his looking forward to the growth of my family and my ideas.

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Citation: Yakov Pepper, *Contrast Spread Technique: Algorithm and Study*, Spine 2020, 5th International Conference on Spine and Spinal Disorders, Webinar, August 26-27, 2020, 07