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Contrast Spread Technique: Algorithm and Study

Contrast Spread Technique (CST) is a new and evolving method for epidural space recognition. It is based on radiological images' interpretation and possesses some theoretical advantages over the conventional loss of resistance (LOR) technique. Unlike the LOR technique, which relies on the performing physician's subjective feeling, 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 a third party. By emphasizing the analysis of resulted radiological images instead of relying on the tactile sense of resistance, it may improve the needle placement accuracy and enhance the epidural injections' safety by preventing dural penetration. Since August of 2014, I safely performed more than 2000 injections with CST and, together with my colleagues, created an algorithm for performing cervical ESI with this technique. I conducted an IRBapproved study (Canadian SHIELD, 07/18/19) where both methods were compared. Cervical ESI was performed with either 18G or 25G needles, 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 epidural space detection confirmed by LORT using 18G 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 the 25G group, it is unclear why in the 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 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 assisting performing cervical injections in the sitting position safely, he also discovered a new way of epidural space identification. He called it Contrast Spread Technique (CST). He published several articles and presented on CST at different conferences: London Pain Forum Winter Symposium (2015, 2016, 2017, 2020), at the New York State Pain Society ASM (2017) and the British Pain Society ASM (2018).

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