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Letter to the Editor

Pain relief or better radial access? Unanswered questions from the CATDOL study

¿Alivio del dolor o mejor acceso radial? Preguntas sin respuesta del estudio CATDOL

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To the Editor,

I read with interest the CATDOL study by Roldán-Medina et al.[1], which compared topical analgesic cream and cold spray with no pretreatment before radial artery cannulation. The authors address a practical and frequently overlooked aspect of transradial procedures, and both strategies were associated with lower visual analog scale (VAS) scores. Nevertheless, several issues limit the applicability of these findings to the routine clinical practice.

Clinical relevance of the observed effect. At the first assessment, adjusted VAS reductions vs control were 1.22 points with cold spray and 0.70 points with analgesic cream. A change of approximately 13 mm on a 100-mm VAS has been proposed as clinically important in acute pain.[2] The effect of cold spray approaches this threshold, whereas that of analgesic cream appears more modest at this time point. Importantly, the 0.5-point difference used for the sample size calculation referred to the comparison between cream and cold spray, rather than either treatment vs control. Although the observed between-treatment difference at time point 1 was indeed close to this value (3.61 vs 3.12; difference, 0.49), it was not statistically significant ($P = .069$). In the absence of a prespecified equivalence or noninferiority framework, this finding should not be interpreted as demonstrating equivalence between the 2 strategies.

A design that may miss the principal procedural harm. Cold spray produces transient superficial vasoconstriction, as the authors acknowledge. The clinically relevant concern is therefore not only pain but also whether arterial cannulation becomes more difficult. However, eligibility required successful radial access, potentially excluding precisely those cases in which access failed. Furthermore, the number of puncture attempts, operator experience, technical difficulty, ultrasound guidance, and first-attempt success were not systematically recorded. The literature is not entirely consistent: a meta-analysis of vapocoolant use during vascular puncture reported greater operator-perceived procedural difficulty without a significant reduction in first-attempt success,[3] whereas a randomized study of radial artery cannulation suggested that vapocoolant may be a feasible alternative to lidocaine infiltration.[4] Although these studies examined different clinical settings, together they underscore the importance of assessing procedural performance alongside analgesic efficacy.

What was actually measured? Time point 1 assessed pain after subcutaneous local anesthetic injection, whereas time point 2 was recorded after arterial sheath placement, once local anesthesia had already been administered. Thus, the association between cold spray and a 0.83-point reduction in VAS score at time point 2 is less straightforward from a mechanistic perspective. Expectation and temporal effects cannot be excluded, particularly because enrollment was sequential (control first, followed by cream and then cold spray) and neither patients nor assessors were blinded.

Logistical advantage. The reported interval between treatment application and puncture was 11.5 minutes with cold spray and 97.9 minutes with cream. However, the authors appropriately acknowledge that this interval largely reflects the study protocol and cath lab workflow rather than actual application time. In addition, the difference in direct material costs was small (€0.17 per patient). These findings describe pretreatment logistics rather than a demonstrated reduction in procedural time.

CATDOL represents a useful first step toward improving patient comfort during transradial procedures. However, whether topical pretreatment, particularly cold spray, improves radial access rather than merely reducing pain remains unanswered. A randomized, blinded trial should assess patient-reported pain alongside first-pass success, number of puncture attempts, access time, radial artery spasm, crossover, and the need for ultrasound guidance. Such a trial should include all attempted radial accesses rather than only successful cannulations.

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STATEMENT ON THE USE OF ARTIFICIAL INTELLIGENCE

I declare that no artificial intelligence tools were used in the preparation of this work.

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CONFLICTS OF INTEREST

None declared.

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