The Efficacy of Perfusion Index as an Indicator for Intravascular Injection of Epinephrine-Containing Epidural Test Dose in Propofol-Anesthetized Adults.

Background
Perfusion index (PI) is a noninvasive numerical value of peripheral perfusion obtained from a pulse oximeter. In this study, we evaluated the efficacy of PI for detecting intravascular injection of a simulated epidural test dose containing 15 mug of epinephrine in adults during propofol-based anesthesia and compared its reliability with the conventional heart rate (HR) (positive if $>\text{or}=10 \text{ bpm}$) and systolic blood pressure (SBP) (positive if $>\text{or}=15 \text{ mm Hg}$) criteria.

Methods
Forty patients scheduled for elective general surgery under total IV anesthesia were randomized to receive either 3 mL of lidocaine 15 mg/mL with epinephrine 5 microg/mL or 3 mL of saline IV ($n = 20$ each). HR, SBP, and PI were monitored for 5 min after injection.

Results
Injecting the test dose resulted in an average maximum PI decrease by $65\% +/- 13\%$ at $39 +/- 15 \text{ s}$. Moreover, maximal increases in HR and SBP were $19 +/- 8 \text{ bpm}$ at $49 +/- 25 \text{ s}$ and $17 +/- 7 \text{ mm Hg}$ at $102 +/- 34 \text{ s}$ after test dose injections, respectively. Using the PI criterion for intravascular injection (positive if PI decreases $>\text{or}=10\%$ from the preinjection value) the sensitivity, specificity, positive predictive, and negative predictive values were $100\%$ (95\% confidence interval [CI]; CI = 83\%-100\%). On the contrary, sensitivities of 95\% (CI = 76\%-99\%) and 90\% (CI = 70\%-97\%) were obtained based on HR and SBP criteria, respectively.

Conclusion
PI is a reliable alternative to conventional hemodynamic criteria for detection of an intravascular injection of epidural test dose in propofol-anesthetized adult patients.