Use of Perfusion Index from Pulse Oximetry to Determine Efficacy of Stellate Ganglion Block.
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Background
Stellate ganglion block (SGB) is a widely used procedure for treatment of pain in the head and upper body, but the clinical signs used to verify the effectiveness of SGB can be ambiguous or variable in some patients. We observed the chronological changes in perfusion index (PI) from pulse oximetry to determine if these changes correlated with the clinical signs associated with an effective SGB. We hypothesized that PI could provide an easy method to assess the effectiveness of SGB.

Methods
We compared the chronologies in PI on the treated and untreated sides of 21 patients in whom treatment by SGB was found to be effective. The SGB was performed by administering 6 mL of 1% mepivacaine. The effectiveness of the SGB was confirmed on the basis of clinical signs. Additionally, in two patients we tested whether increased PI on the treatment side correlated with increased microcirculation as measured by laser-Doppler blood flowmetry.

Results
On the side treated by SGB, PI increased 61.4% in the earlobe and 60.5% from baseline values in the upper limbs, at 5 minutes after initiation of the procedure. Differences in PI before and after treatment were significant at both sites. No time-course increases in PI were found on the untreated side at either site. Following SGB, increases in PI correlated with increases in blood flow as measured by laser-Doppler flowmetry.

Conclusion
PI increased in the earlobe and upper limbs on the treated side of 21 patients who received an effective SGB but not on the untreated side. The positive correlations between changes in PI and both presence of clinical signs and changes in blood flow in the skin microcirculation indicate a sympatholytic effect, suggesting that the PI could be useful in determination of the efficacy of SGB.