

Effect of nitrous oxide on spectral entropy during sevoflurane anaesthesia at an altitude of 1 400 metres

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Introduction

Spectral entropy is a monitor of the level of anaesthesia. No change in entropy was recorded with N₂O alone, despite a loss of consciousness,¹ but entropy decreased when N₂O was added to sevoflurane.^{2,3}

Objective

The objective of this study was to determine the effect of nitrous oxide on spectral entropy at 1 400 metres above sea level.

Methods

Seventy adults were randomly divided into seven groups, receiving N₂O of end-tidal 0%, 10%, 20%, 30%, 40%, 50% or 60%. After induction, the patients received 2% sevoflurane in O₂/air. Response and state entropy were recorded (Datex-Ohmeda). After the addition of N₂O, entropy was recorded again.

Results

Between the groups, entropy differed during N₂O administration ($p < 0.0001$). In the groups, entropy differed before and during N₂O administration ($p < 0.0001$) (ANCOVA). The trend line for the relationship between change in entropy and N₂O fitted a linear function ($p < 0.0001$) (see Figure 1).

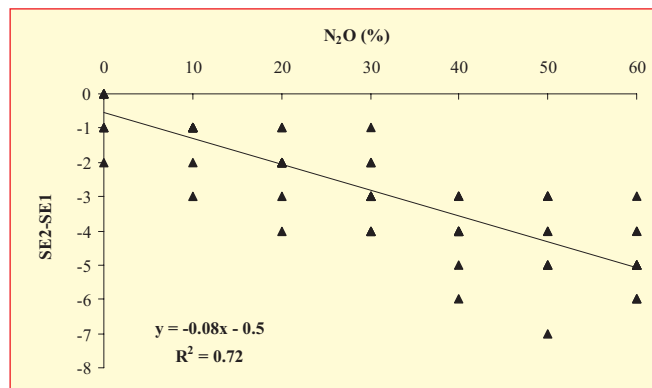
Conclusion

We demonstrated that entropy is not blind to N₂O during 1 MAC of sevoflurane at an altitude of 1440 m in the absence of surgical stimulation. There is a linear relationship between the change in entropy and end-tidal concentrations of N₂O.

Recommendations

N₂O concentrations (equi-MAC) should be taken into account when recording entropy during sevoflurane anaesthesia.

Figure 1: Relationship between changes in state entropy (SE2-SE1) and N₂O concentration



References

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3. Soto RG, Smith RA, Miguel RV. ASA Abstracts 2004;Oct:A-327.