

Evaluation of Finger and Forehead Pulse Oximeters during Mild Hypothermic Cardiopulmonary Bypass.

Yamaura K., Irita K., Kandabashi T., Tohyama K., Takahashi S. *J Clin Monit Comput.* 2007 Aug;21(4):249-52.

Introduction

The purpose of this study was to examine and compare the four combination of pulse oximeters (POs) and monitoring sites, the Nihon Kohden BSS-9800 (N), the Masimo SET Radical (M), the Nellcor N550 D-25 (N-D) and the Nellcor N550 Max-Fast (N-MF) in patients with peripheral hypoperfusion.

Methods

About 20 adult patients undergoing cardiac surgery using mild hypothermic cardiopulmonary bypass (CPB) were studied prospectively. PO sensors were applied on fingers in N, M and N-D, while on the forehead in N-MF.

Results

PO failure was defined as failure to show no SpO₂ value or incorrect SpO₂ values. PO failure occurred in 12 patients with N, ten patients with M, four patients with N-D and ten patients with N-MF, respectively ($p < 0.05$ N-D vs. N, M, N-MF). The duration of PO failure was 19 +/- 30% of aortic cross-clamping with N, 29 +/- 33% with M, 10 +/- 26% with N-D and 43 +/- 57% with N-MF, respectively ($p < 0.05$ N-D vs. M and N-MF).

Conclusions

The results suggested that N-D is most useful among four combinations of POs and monitoring sites tested in this study for monitoring SpO₂ during hypoperfusion. The superiority of N-MF during hypoperfusion was not evident in the present study