Investigation into the use of a new oesophageal pulse oximeter in cardiothoracic surgery patients

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Conventional pulse oximetry may fail when peripheral circulation is compromised.[1] [2] We have investigated the use of a new oesophageal reflectance pulse oximeter[3] in a group of patients with poor peripheral perfusion based on the hypothesis that blood flow to this central site may be preferentially preserved.

After induction of anaesthesia in 50 elective cardiothoracic surgery patients a purpose-built oesophageal reflectance pulse oximetry probe was positioned in the oesophagus. Signals were recorded at various depths of the oesophagus, as the probe was withdrawn, until the site of best signal was determined. Monitoring in theatre was intermittent and during these periods the saturation readings were compared with the arterial saturation of blood gases and co-oximetry results.

Signals were recordable in all 50 patients and oxygen saturation readings were in good agreement with arterial blood gas and co-oximetry results. The results were compared using Bland Altman analysis (Fig. 1). Five of the patients showed a period of peripheral pulse oximetry failure while oesophageal signals remained. These failures occurred on the intensive care unit, when patients were peripherally cool.

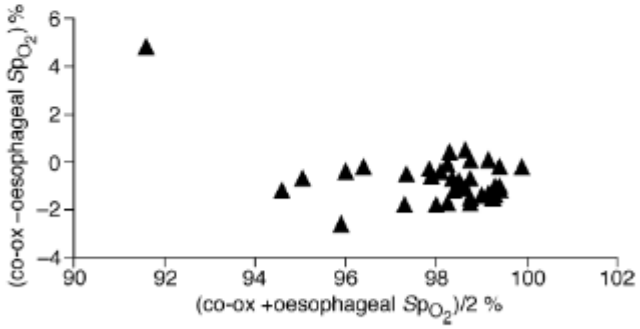

Fig 1 Difference against mean for oxygen saturation data from oesophagus and co-oximetry.

Peripheral pulse oximetry signals are often difficult to obtain in patients with poor peripheral perfusion. Oesophageal pulse oximetry may be a useful alternative way of monitoring arterial oxygen saturation in such patients.

Keywords: gastrointestinal tract, oesophagus; measurement techniques, pulse oximetry

References

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