SEDATION SOLUTIONS

Respiratory depression with fentanyl and remifentanil

This is a very important publication for all sedation practitioners involved in sedation practice.

Intravenous boluses of fentanyl, 1 µg kg-1, and remifentanil, 0.5 µg kg-1, give similar maximum ventilatory depression in awake volunteers. Gelberg J, Jonmarker C, Stenqvist O, Werner O. Br J Anaesth. 2012 Mar 22.

Department of Paediatric Anaesthesia and Intensive Care, Children's Hospital, Skane University Hospital, Lund University, 221 85 Lund, Sweden.

Background:

The relative respiratory effects of fentanyl and remifentanil, administered as i.v. bolus, have not previously been studied. We determined what remifentanil bolus dose gave the same maximum depression of ventilation as 1 µg kg(-1) of fentanyl

Methods:

Twelve healthy volunteers re-breathed in a system designed to dampen variations in end-tidal carbon dioxide tension so that measurements would be obtained at similar levels of CO(2) stimulation. The minute ventilation was measured before (V(preinj)) and after injection (V(nadir)) of fentanyl, 1 µg kg(-1), and remifentanil, 0.25, 0.5, and 1 µg kg (-1). The remifentanil doses were plotted against V(nadir)/V(preinj) in a log-probit diagram to determine what amount gave the same maximum ventilatory depression as the fentanyl dose

Results:

A remifentanil dose of 0.47 (0.42-0.62) µg kg(-1) was equidepressant to 1 µg kg(-1) of fentanyl. Fifteen minutes after fentanyl injection, the median minute ventilation was 30-40% less than after injection of remifentanil, 0.25 and 0.5 µg kg(-1) ($P<0.05$).

Conclusions:

Fentanyl, 1 µg kg(-1), and remifentanil, 0.5 µg kg(-1), gave similar maximum ventilatory depression. The onset of and recovery from ventilatory depression were faster with remifentanil.