Reduced hypothermia and improved patient thermal comfort by perioperative use of a disposable active self-warming blanket

A randomized multicenter trial

Results and discussion

Subjects in the intervention group had significantly higher (p < 0.001) perioperative core body temperature (36.52°C ± 0.37°C) relative to subjects in the control group (36.34°C ± 0.34°C). In particular, subjects in the intervention group had significantly higher intra- and postoperative core body temperatures. Subjects in the intervention group had a significantly lower incidence of hypothermia intraoperatively and postoperatively, compared with the subjects in the control group (Figure 1). These patients also had a significantly higher thermal comfort score pre- and postoperatively (Figure 2). Using the BARRIER® EasyWarm® blanket, significantly more patients were compliant to the SCIP measures than in the control group (58% versus 36%). There were no serious adverse events recorded in either group. Additional active warming was only initiated in seven patients: two in the intervention group and five in the control group (ns).

Background and goal of study

Inadvertent perioperative hypothermia is a common but preventable condition associated with increased risk of infections, bleeding, postoperative shivering, cardiovascular complications and patient discomfort. The initial drop of body temperature after induction of general anaesthesia is attributed to redistribution of blood from the core to the periphery. Preoperative skin warming (pre-warming) has been shown as efficacious in minimizing redistribution hypothermia. Recently a disposable, active self-warming blanket (BARRIER® EasyWarm®) has been introduced. The blanket has pouches with warmers containing iron, which is activated when exposed to ambient air. The blanket remains active at an average temperature of 44°C for a minimum of ten hours. The blanket is easy to use, requires no electricity and can be used through the entire perioperative period.

The goal of the present study was to evaluate the efficacy and safety of the active self-warming blanket when used for continuous active warming to prevent general-anaesthesia-induced hypothermia during the perioperative period.

Material and methods

271 adult patients were studied in a randomized, prospective, open label, parallel group designed study at five hospitals in Europe. Twenty-five patients were discontinued from the study due to protocol deviations, resulting in 246 patients available for analysis. The patients were scheduled for elective orthopaedic, gynaecologic or ENT surgery with a planned duration of 30-120 minutes under general anaesthesia (intervention), and the other receiving no perioperative warming (control). The primary outcome was perioperative core body temperature. Secondary outcomes were incidence of hypothermia, adverse events, patient thermal comfort and Surgical Care Improvement Project (SCIP) measures. Active warming was continued until lymphatic temperature was above 36.5°C in the postoperative care unit (PACU). If core temperature dropped under 35.5°C during surgery, additional active warming was allowed according to the hospital’s standard of care. Vital parameters and patient core temperature were measured at regular intervals throughout the perioperative period.

Incidence of hypothermia in % (CBT <36°C)

Thermal comfort in mm (visual analogue scale)

Conclusion

Perioperative use of BARRIER® EasyWarm® active self-warming blanket:
- Reduces intra- and postoperative hypothermia
- Improves pre- and postoperative patient thermal comfort in elective adult surgery patients
- No serious adverse events were recorded in either group.

References:

The study is recorded on clinicaltrials.gov with the following ID NCT01900067.