

**Hazebroek EJ, Schreve MA, Visser P, De Bruin RW, Marquet RL, Bonjer HJ. Impact of temperature and humidity of carbon dioxide pneumoperitoneum on body temperature and peritoneal morphology. *J Laparoendosc Adv Surg Tech A* 2002; 12: 355-64**

LINK - <https://www.ncbi.nlm.nih.gov/pubmed/12470410>

Abstract

BACKGROUND:

The insufflation of cold gas during laparoscopic surgery exposes patients to the risk for hypothermia. The objectives of this study were to investigate whether heating or humidification of insufflation gas could prevent perioperative hypothermia in a rat model, and to assess whether the peritoneum was affected by heating or humidification of the insufflation gas.

METHODS:

Rats were exposed to insufflation with either cold, dry carbon dioxide CO<sub>2</sub> (group I); cold, humidified CO<sub>2</sub> (group II); warm, dry CO<sub>2</sub> (group III); or warm, humidified CO<sub>2</sub> (group IV); another group underwent gasless laparoscopy (group V). Core temperature and intraperitoneal temperature were registered in all animals during 120 minutes. Specimens of the parietal peritoneum were taken directly after desufflation and 2 and 24 hours after the procedure. All specimens were analyzed with scanning electron microscopy (SEM).

RESULTS:

During the 120-minute study period, core temperature and intraperitoneal temperature were significantly reduced in groups I, II, and III. In the animals that underwent warm, humidified insufflation (group IV) and the gasless controls (group V), intraoperative hypothermia did not develop. At SEM, retraction and bulging of mesothelial cells and exposure of the basal lamina were seen in the four insufflation groups (groups I-IV) and also in the gasless controls (group V).

CONCLUSION:

Insufflation with cold, dry CO<sub>2</sub> may lower the body temperature during laparoscopic surgery. Hypothermia can be prevented by both heating and humidifying the insufflation gas. Changes of the peritoneal surface occur after CO<sub>2</sub> insufflation, despite heating or humidifying, and also after gasless surgery.