LAPAROSCOPIC SURGERY IN SMALL RUMINANTS
Sonja Franz¹, Agnes Dadak², Gudrun Schöffmann³, Paul Coppens³, Walter Baumgartner¹
¹Clinic for Ruminants, ²Institute of Pharmacology, ³Clinic for Anesthesiology and Perioperative Intensive Care, University of Veterinary Medicine Vienna, Vienna, Austria

Introduction: Indications for performing laparoscopic surgery in SMALL RUMINANTS are patients with obstructive urolithiasis. Performing this minimal invasive operation technique demands for insufflation of the abdominal cavity with CO₂ (capnoperitoneum) and surgery in dorsal recumbency. It is known from literature that there are effects on the acid-base status when working with capnoperitoneum.

Objective: Due to the lack of experimental studies dealing with influence of capnoperitoneum on blood gas and the acid base status in SMALL RUMINANTS performing routine laparoscopic surgery, this study was performed to investigate changes in pH, pCO₂, BE, HCO₃ and PO₂ during laparoscopy.

Material and method: Laparoscopy was performed in 10 clinically healthy male sheep aged approximately 9 months (mean weight: 38.5 ± 2.46 kg). Study procedures were approved by the Institutional Ethics Committee of the University and had governmental approval. Anaesthesia was induced with sodium thiopental and maintained with isoflurane in 100 % oxygen. Volume controlled intermittent positive pressure ventilation was performed up to the end of anaesthesia. Each sheep was positioned in dorsal recumbency. The ventral aspect of the abdomen was prepared for aseptic surgery. After incision of the skin using a scalpel an 11 mm optic trocar cannula was inserted into the abdominal cavity. The abdominal cavity was then distended with carbon dioxide via the optic trocar until a constant abdominal pressure of 13 mm Hg was obtained. Arterial blood sampling was performed before insufflation of the abdominal cavity and 5 times during capnoperitoneum (5 min, 10 min, 15 min, 20 min, 30 min). Body temperature also was taken.

Results and discussion: The results showed an increase of pCO₂ and a decrease of pH, BE, and pO₂ during capnoperitoneum. HCO₃ only showed a mild decrease. The body temperature at all time points showed lower values than the baseline! The results correspond with experimental studies in other animal species. Thus, performing laparoscopy with capnoperitoneum leads to an impact on the blood gas and acid base status. Another important aspect is the observed decrease of body temperature during surgery.

Conclusion: Both aspects should be taken into account at any rate operating animals with metabolic instabilities and for postoperative treatment.

Keywords: Laparoscopy, sheep, capnoperitoneum, acid base status