V SUMMARY

Effects of repeated Isoflurane anaesthesia with Xylazine/Polamivet® premedication on biochemical and physiological parameters and the fitness of Beagle-dogs.

In the study, the effects of repeated anaesthesia on selected parameters of general clinical examination (body weight, body temperature, respiratory rate and heart rate, cranial nerve tests), the blood pressure, fitness (heart rate on defined ergometric load), haematological parameters and clinical chemistry (particularly liver and renal function tests) and the recovery behaviour were investigated in 1- to 2-year old Beagle-dogs. The effect of anaesthetic intervals and anaesthetic frequency on the investigated body functions and their significance for the well-being of the animal were of particular interest.

The investigations presented here were conducted in dogs in which pharmacological investigations of ultrasound contrast agents from Schering AG diagnostics research were taking place in parallel over a prolonged period. The dogs repeatedly received premedication with Xylazine and Polamivet® and inhalation anaesthesia using Isoflurane.

To evaluate the effect of the anaesthetic interval, a crossover experimental model was selected with 2 groups each consisting of 3 female Beagle-dogs and 2 different experimental phases. The animals in the first group were anaesthetised twice at an interval of 8 weeks in the first experimental phase, and the animals in the second group were anaesthetised 5 times at an interval of 2 weeks. In the second experimental phase this sequence was reversed between the groups. There was a 3-month break between the experimental phases. All other experimental data were described exploratively.
The general clinical examination parameters, blood pressure and fitness were each recorded 1 day before anaesthesia and 24 hours, 7 and 14 days after anaesthesia. To examine renal and hepathic function in addition, 3 blood samples were taken during the anaesthesia (after premedication, 2 hours after induction of the inhalation anaesthesia and at the end of the anaesthesia). Furthermore, haematological and clinical chemistry investigations were each performed before and 2 weeks after each experimental phase. The recovery behaviour of the dogs following the anaesthesia was observed for up to 1 hour.

The results of the crossover model showed a statistically significant difference in only one parameter with regard to the different anaesthetic intervals (liver enzyme ALP higher with anaestheisa at an interval of 8 weeks).

The number of anaesthesia procedures had no effect on the parameters. However, some of the individual anaesthesia procedures had an effect on the recorded parameters predominantly 24 hours after the end of anaesthesia. These were apparent as weight loss, a rise in body temperature, an increase in liver enzyme activity (AST, ALT, ALP) and a reduced fitness. An effect on renal function cannot be fully excluded as 2 animals showed a temporary increase in serum urea or creatinine concentration over the reverences.
The blood pressure remained unaffected. The effect of the anaesthesia procedures on the respiratory and heart rate was slight and not important. All of the effects of the anaesthesia were reversible and were usually no longer observable after 7 but at the latest after 14 days. All the other recorded parameters of haematology and clinical chemistry and the recovery behaviour remained unaffected. Independent of the experimental phase, nearly all the animals demonstrated obvious tremor in the recovery warming box.

The results of the general clinical examination suggest a temporary deterioration in well-being.

Based on the results obtained, an interval of 2 weeks for performing multiple anaesthesia with Xylazine/Polamivet® premedication and Isoflurane anaesthesia in the 6 Beagle-bitches used in this investigation offers sufficient safety for the animal and at the same time for the interpretation of events in the study of ultrasound contrast agents. The dogs showed no lasting injury to health and the well-being of the animals was impaired only temporarily.