

IS THE TYPE OF ANESTHESIA SIGNIFICANTLY IMPORTANT TO INDUCE BLADDER INSTABILITIES IN AN ANIMAL MODEL?

Hypothesis / aims of study

The induction of reproducible bladder instabilities in animal models continues to be a problem in many current neurourological studies. A crucial parameter for successful induction of instabilities seems to be the type of anesthesia.

Study design, materials and methods

We performed intravenous (i.v.) anesthesia with α -Chloralose (70 mg/kg/h) in a rabbit model (n=6). 10 ml of 0.25%, 0.5%, 1% and 5% formalin solution were successively instilled into the urinary bladder. The intravesical pressure was continuously recorded. Analogous procedures were performed in 6 rabbits which were anesthetized by continuous i.v. ketamine hydrochloride (50 mg/kg/h) and xylazine hydrochloride (6 mg/kg/h).

Results

Under anesthesia with ketamine and xylazine hydrochloride it was impossible to trigger detrusor instabilities. Under α -Chloralose involuntary bladder contractions occurred with amplitudes of up to 45 cmH₂O after intravesical instillation of 0.25% formalin solution. The max. amplitude was reached after 15-20 min. The bladder contractions continued over a period of 2-5 hours. Increased concentration of formalin led to an earlier occurrence of instabilities with higher intravesical pressure amplitudes. These instabilities subsided much more quickly. After i.v. application of ketamine (2 mg/kg) and xylazine hydrochloride (0.2 mg/kg) the contractions ceased immediately. A reoccurrence of the instabilities could be observed in relation to the dose of intravenous ketamine/xylazine hydrochloride. Renewed application of ketamine (10 mg/kg) and xylazine hydrochloride (1 mg/kg) led to total disappearance of detrusor instabilities without reoccurrence over 2-3 hours.

Interpretation of results

The rabbit model with α -Chloralose shows reliable and reproducible induction of bladder instabilities even with low formalin concentration. Although higher concentrations of formalin lead to prompter and more intense contractions, their duration is too short to make use of them. The difference between α -Chloralose and the ketamine hydrochloride/xylazine hydrochloride anesthesia is significant and shows the inefficacy of the latter for experimental purposes as even small doses suppress bladder instabilities over long periods of time.

Concluding message

Usage of α -Chloralose combined with intravesical formalin instillation has proved a reliable animal model for the induction of reliable and persistent bladder instabilities.

Disclosures

Funding: none **Clinical Trial:** No **Subjects:** ANIMAL **Species:** rabbit **Ethics Committee:** ethics committee Kiel