

ミニブタの血圧、心拍数、体温及び心電図評価における
emka TECHNOLOGIES社テレメリーシステムの有用性

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Usability of blood pressure, heart rare, body temperature, and
electrocardiogram of miniature pig using emka TECHNOLOGIES
telemetry system

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Introduction

We investigated the effects of (1) Medetomidine hydrochloride/midazolam anesthesia and the antagonist, atipamezole hydrochloride, on heart rate ,blood pressure and temperature (2) on electrocardiogram after oral administration of moxifloxacin in miniature pig using easy TEL + telemetry implant system (emka TECHNOLOGIES). This study was conducted as approved by the Institutional Animal Experiment Committee of NISSEI BILIS Co., Ltd., Shiga Laboratory.

Blood pressure, Heart rate and Temperature

Material & Methods

Animals

A Göttingen minipig (male, 14 months old) and a NIBS minipig (male, 16 months old) were used with telemetry transmitter (easy TEL+_L_EPTA). The animals were housed in a room kept at a temperature 18 to 28℃, a humidity 30 to 80%, 12 hour light/dark cycle (7:00 to19:00).

Methods

Experimental Groups

○ Ketamine 15 mg/kg

○ MM ; Medetomidine 0.05 mg/kg & midazolam 0.25 mg/kg

○ MM+A ; Medetomidine 0.05 mg/kg & midazolam 0.25 mg/kg 1 hour later atipamezole (Medetomidine antagonist) 0.25 mg/kg

Measurement

The drug was administered intramuscularly.

Using the emka TECHNOLOGIES telemetry system, the continuously acquired heart rate, blood pressure and body temperature were measured for 3 hours after the drug administration. Each measurement was performed with one week interval.

•Measurement order : Ketamine 1st→ Ketamine 2nd →MM 1st →MM 2nd → MM+A 1st→MM+A 2nd

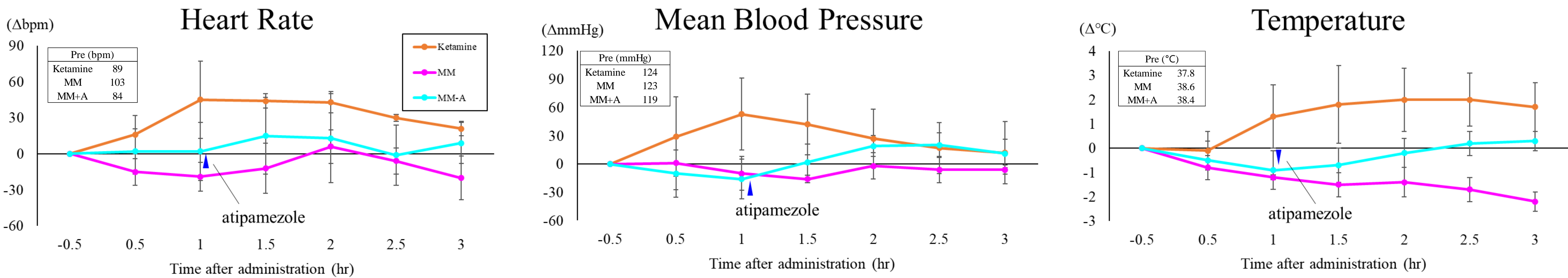
•The points of analysis : Before administration and 0.5, 1, 1.5, 2, 2.5 and 3 hour after administration.

•Sampling time : Blood pressure, heart rate and body temperature were determined for the periods from 2.5 min before to 2.5 min after the points of analysis (a total of 5 min).

Analysis

The difference from the Pre value at each time point (Δ value) was obtained, and the mean ± S.D. was calculated.

Results



Conclusion

Heart rate and body temperature increased with ketamine hydrochloride. Body temperature decreased with medetomidine hydrochloride/midazolam. In medetomidine hydrochloride/midazolam + atipamezole hydrochloride, the body temperature rose after administration of atipamezole hydrochloride. easy TEL + telemetry implant system is useful for evaluating changes in minipig blood pressure, heart rate and body temperature.

Acknowledgment

We appreciate the support and cooperation from emka TECHNOLOGIES

Electrocardiogram

Material & Methods

Animals

A Göttingen minipig (male, 13 months old) was used with telemetry transmitter (easy TEL+_L_EPTA).

Drug

Moxifloxacin Hydrochloride (Bayer Yakuhin, Ltd.)
Dose : 30, 100 mg/kg
Route : Oral
Vehicle: 0.5 (w/v) % MC

Methods

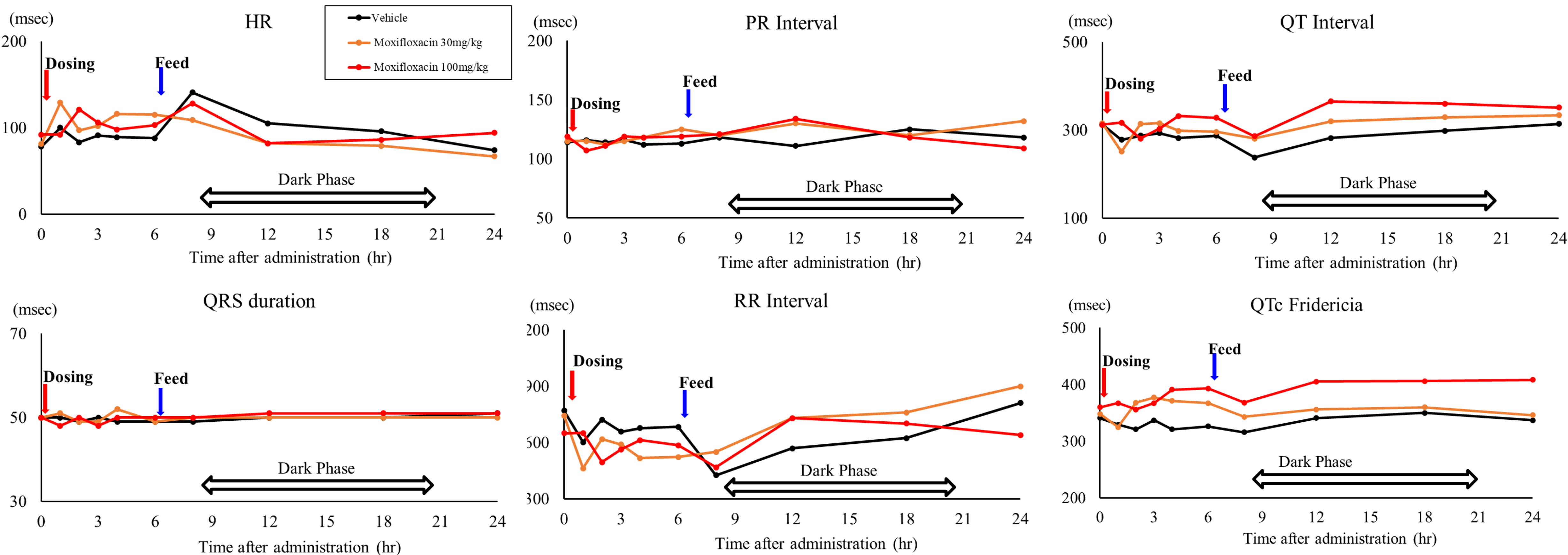
Measurement

The continuously acquired ECG was measured for 24 hours after administration.

Time points of analysis

Before administration and 1, 2, 3, 4, 6, 8, 12, 18 and 24 hour after administration.

Results



Conclusion

Compared with vehicle, 30 mg/kg of moxifloxacin tended to prolong QTcF from 2 hours to 6 hours post-dose, and 100 mg/kg of moxifloxacin tended to prolong QTcF from 4 hours to 24 hours post-dose. In most minipig, the R wave potential was low and the T wave was higher than the R wave potential, but the easy TEL + telemetry implant system analyzed based on the registered waveform, so the analysis was smooth.