Glucagon Pharmacokinetics in a Pig model
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Introduction
Compared to continuous subcutaneous insulin infusion, continuous intraperitoneal insulin infusion has demonstrated superiority in reducing HbA1c and hypo-/hyperglycaemic episodes in humans¹. One could mimic normal physiology more closely by administering glucagon intraperitoneally together with insulin. However, our knowledge of the pharmacological properties of glucagon after intraperitoneal delivery is limited. Hence, this study aims to compare the pharmacokinetics of glucagon and the pharmacodynamic effects of glucagon on glucose metabolism after intraperitoneal and subcutaneous administration in a pig model.

Methods
We included ten pigs in the analyses. Glucagon was administered intraperitoneally, subcutaneously and intravenously in a randomised order. Samples were collected every 2-10 minutes for 150 minutes to determine arterial plasma glucagon concentrations and every 2-5 minutes for 60 minutes to determine arterial blood glucose concentrations.

Results

Conclusions
Intraperitoneal glucagon administration results in lower systemic glucagon concentrations than subcutaneous administration, while the effect on glucose metabolism is equivalent. The results are compatible with a major first-pass metabolism of glucagon in the liver.

References

Declarations
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