Influence of propofol and dexmedetomidine on oxytocin-induced contractions of isolated pregnant rat myometrium.

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Background:

- ❖ Propofol is used after extraction of the fetus in pregnant women who have received combined spinal-epidural anaesthesia for caesarean section. In previous studies, it was shown that propofol has an inhibitory effect on uterine contraction like volatile anaesthesia^{1, 2}).
- ❖ On the other hand, it has been shown that dexmedetomidine is an α_2 -adrenergic agonist that induced uterine contraction via a pathway involving G protein³).
- ❖ However, there are no data on a comparison of the effects of propofol and dexmedetomidine on oxytocin-induced contractions of the isolated pregnant rat myometrium.
- ❖ The aim of this study was to determine the effects of propofol and dexmedetomidine on oxytocin-induced contractions of the isolated pregnant rat myometrium.

REFERENCES

- 1) Anesthesiology 2001;95:1245-55
- 2) Acta Anaesthesiol Scand 2005;49:1355-1359
- 3) European Journal of pharmacology 2000;390:185-195

Methods:

- ❖ With institutional approval, 6-mm-long uterine rings were sliced from the uterine horns of late-term pregnant Wistar rats and mounted in a temperature-controlled organ bath containing 10 ml Krebs solution (figure 1).
- ❖ After administration of oxytocin (20 nM), contraction-force and contraction-frequency changes in response to propofol (10^{-7} - 10^{-5} M) or dexmedetomidine (10^{-9} - 10^{-7} M) were evaluated.

- ❖ The way of evaluation
  - contraction-force: area under the curve
  - contraction-frequency: the frequency per 10 minutes

- ❖ Statistical analysis was performed using the Kruskal-Wallis' H-test followed by the Newman-Keuls-type test for multiple comparisons. P values < 0.05 were considered statistically significant.

Results:

- ❖ Propofol inhibited oxytocin-induced contraction-force of the pregnant rat myometrium in a dose-dependent manner, but dexmedetomidine did not inhibit oxytocin-induced contraction-force of the pregnant rat myometrium (figure 2).
- ❖ The effects of both propofol and dexmedetomidine on contraction-frequency did not change significantly.

Conclusions:

- ❖ Dexmedetomidine did not inhibit oxytocin-induced contraction of the pregnant rat myometrium.
- ❖ Dexmedetomidine may be preferable for maintaining uterine contraction in caesarean section.