

## The Effect of Mepivacaine on Contractility of Isolated Aorta Rings in Normal and Aortic-Banded Rats

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### AIM

Mepivacaine, an amide local anesthetic agent, is widely used in anesthesiology in order to achieve epidural anesthesia or nerve block and in ophthalmic and maxillofacial surgery for infiltration anesthesia. However, clinical studies have shown that hypotension and bradycardia are common adverse events in patients undergoing epidural anesthesia and nerve block with mepivacaine. The present study was designed to investigate the vascular reactivity of mepivacaine on isolated rings of rat thoracic aorta in the model of aortic constriction induced cardiac hypertrophy compared to normal rats.

### METHODS

Cardiac hypertrophy was induced in Wistar rats by aortic banding after 4 weeks (HYP), while sham operated animals served as controls (SOP). Isolated aortic rings with or without endothelium (E+, E-) after an initial stabilization period, were contracted with KCl (10 to 60 mM) and phenylephrine ( $10^{-10}$  to  $10^{-5}$  moles/L) in the presence or not of mepivacaine (Mepi,  $10^{-3}$  M). The following groups were formed: SOP(E+) n=9, SOP-Mepi(E+), n=10, SOP(E-), n=11, SOP-Mepi(E-), n=11, HYP(E+), n=9, HYP-Mepi(E+), n=9, HYP(E-), n=8, HYP-Mepi(E-), n=10. Maxi-

mal tension (Tmax) in g was measured in response to KCl and phenylephrine with intact and denuded endothelium respectively.

### RESULTS

Results are shown in the following table.

GROUPS	Tmax, KCl	Tmax, PE
SOP(E+)	0.97 (0.07)	1.08 (0.11)
SOP-Mepi(E+)	0.55 (0.05)*	1.26 (0.09)
SOP(E-)	0.99 (0.04)	1.79 (0.05)*
SOP-Mepi(E-)	0.62 (0.03)**	1.28 (0.04)**
HYP(E+)	1.08 (0.06)	1.51 (0.08)
HYP-Mepi(E+)	0.6 (0.06)+	1.22 (0.09)
HYP(E-)	1.07 (0.06)	1.95 (0.07)+
HYP-Mepi(E-)	0.59 (0.04)++	1.29 (0.06)++

\*p<0.05 vs SOP(E+), \*\*p<0.05 vs SOP(E-)  
+p<0.05 vs HYP(E+), ++p<0.05 vs HYP(E-)

### CONCLUSIONS

Mepivacaine reduces contractility of aorta in response to KCl in the presence or absence of endothelium. On the other hand, mepivacaine reduces contractility to phenylephrine only when endothelium is removed in normal aortas as well as in aortas of aortic-banded rats.