

THE CARDIAC-RENAL-NEURAL REFLEX PLAYS A MAJOR ROLE IN NATRIURESIS INDUCED BY LEFT ATRIAL DISTENSION IN CONSCIOUS DOGS

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Summary

The role of cardiac-renal-neural reflex in the natriuresis induced by left atrial balloon inflation was investigated in conscious dogs. Female mongrel dogs were assigned randomly to 1) sham-operated (n=8), 2) cardiac-denervated (n=6), and 3) renal-denervated (n=8) dogs. The dogs were chronically instrumented with a bipolar stainless steel wire electrode for measurement of renal sympathetic nerve activity (RSNA). Balloon inflation induced a step increase in left atrial pressure (Pla) by 7.7 ± 1.7 mmHg, a step decrease in RSNA ($-66.6 \pm 5.5\%$) and concomitant increases in urine flow ($441 \pm 142\%$), osmolal excretion ($60 \pm 12\%$) and sodium excretion ($300 \pm 69\%$) in sham-operated dogs. Renal-denervation abolished the diuresis and natriuresis during balloon inflation. Chronic cardiac-denervation abolished also the diuresis and natriuresis in the face of a similar increase in Pla. RSNA did not change significantly throughout the experimental period in cardiac-denervated dogs. It is concluded that a sustained reduction of RSNA originating from left atrial mechanoreceptors plays a major role in the natriuresis during left atrial distension in conscious dogs.

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