

The attenuation of cisplatin-induced acute renal failure by saline loading.

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Summary

This study was performed to evaluate the effect of saline loading on apoptotic cell death in cisplatin-induced acute renal failure in rats. Acute renal failure was induced by the intravenous injection of 5 mg/Kg cisplatin in Sprague-Dawley rats. Following the injection of cisplatin, serum creatinine increased from 0.61 ± 0.07 mg/dl to 0.88 ± 0.22 and 2.00 ± 0.46 mg/dl on days 3 and 5, respectively. Saline drinking did not affect the serum creatinine on day 3 (0.96 ± 0.12 mg/dl), but significantly suppressed on day 5 (1.15 ± 0.16 mg/dl, $p < 0.001$). In contrast to the effect of saline load on renal function, saline loading did not lessen morphological change evaluated as the tubular damage score. Agarose gel electrophoresis of DNA from kidneys 5 days after the cisplatin injection disclosed the so-called "ladder" pattern, indicating the development of apoptosis in this model. The apoptotic cell death was evaluated semi quantitatively using terminal deoxytransferase-mediated dUTP-biotin nick end labeling (TUNEL method). The number of TUNEL positive cells increased from 0.19 ± 0.04 to 2.12 ± 0.27 and 4.08 ± 0.24 on days 3 and 5. Saline loading did not attenuate the increase in the number of TUNEL positive cells (2.00 ± 0.22 and 3.92 ± 0.30 on days 3 and 5, respectively).

These findings suggest that saline loading attenuate the functional impairment but does not affect the morphological damage and the induction of apoptosis in cisplatin-induced acute renal failure in rats.