Hemodynamic effects of the early and long-term administration of propranolol in rats with intrahepatic portal hypertension

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Résumé en anglais
Background and aims The aims of this study were to evaluate a preventive effect on collateral venous circulation of long-term administration of propranolol in intrahepatic portal hypertensive rats. Methods Eighty-six Sprague-Dawley rats were allocated to two models of hepatic fibrosis, bile duct-ligated (BDL) induced and carbon tetrachloride (CCl4) induced. Each model was divided into two groups: one receiving placebo and the other propranolol (75 mg kg⁻¹ d⁻¹). Mean arterial pressure (MAP), heart rate (HR), portal pressure (PP), cardiac index (CI), vascular systemic resistance, and splenorenal shunt blood flow (SRS-BF) were measured in anesthetized rats. Results In the BDL model, no significant hemodynamic changes were observed in the propranolol group compared with the placebo group. In CCl4-induced rats, HR (390 ± 50 vs. 329 ± 51 beats/min, P = .001), CI (44 ± 11 vs. 34 ± 10 ml/min, P = .004), PP (15.4 ± 3.0 vs. 13.4 ± 1.9 mmHg, P = .045), and SRS-BF (1.4 ± 1.1 vs. 1.0 ± 1.0 ml/min, P = .047) were significantly lower in the propranolol group. Conclusions This study showed that propranolol has a significant hemodynamic effect only in the CCl4 model and suggested a model-dependent effect of propranolol.

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