Acute intravenous ethanol reduces trans-sphincteric flow in the anaesthetised possum

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The role of sphincter of Oddi (SO) function in the induction of alcoholic acute pancreatitis is unclear. Previous animal studies assessing the effect of ethanol on SO motor function have produced conflicting results. Aim: To examine the effects of intravenous ethanol on trans-sphincteric flow (TSF), a functional indicator of SO function, in anaesthetised Australian possums. Methods: Possums were anaesthetised (anaesthesia induction intramuscular xylazine (10 mg/kg) and ketamine (20 mg/kg) and maintained a constant intravenous infusion of sodium thiopentone (5-10 mg/kg/h) for the duration of the experiments. In separate animals, ethanol (0.5, 1.0 or 1.5g/kg) or saline was infused over a 1h period via the left femoral vein. TSF was measured prior, during and 3h following ethanol infusion. Blood pressure was measured continuously in all animals. Ethanol concentrations were determined at 30min intervals in blood. Results: The 0.5g/kg infusion of ethanol did not significantly alter TSF, but the 1.0 and 1.5g/kg ethanol infusion decreased TSF significantly with maximal changes to 50% and 20% of baseline at 1h ($P<0.05$ for both 1.0 and 1.5g/kg doses vs saline) respectively. Following the cessation of the ethanol infusion TSF recovered to 60-70% of baseline. Blood pressure was not significantly changed between ethanol and saline infusion. Blood ethanol levels peaked at 1h, reaching 123±14, 321±59 and 541±154mg/100ml for the 0.5, 1.0 and 1.5g/kg infusions respectively and then declined. Conclusion: These data suggest that acute intravenous ethanol (and/or its metabolites) reduces TSF in a dose-dependent fashion by increasing SO motor activity. The enhanced SO motor activity will probably also increase pancreatic duct pressure which could contribute to the onset of acute pancreatitis.

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