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Cardiovascular effects of pentazocine in rabbits

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After the intravenous injection of pentazocine in man some workers (Lal, Savidge & Chhabra 1969) have recorded a transient fall in arterial pressure followed by a rise to levels higher than those of the control period. Others (Jewitt, Maurer & Hubner, 1970) did not observe the initial fall but noted a transient reduction in cardiac output followed by a prolonged rise in systemic and pulmonary arterial pressures. These haemodynamic changes are unexplained.

In decerebrate rabbits or in rabbits anaesthetized with chloralose–urethane, rapid intravenous injection of pentazocine in doses of 0·5, 1·0 and 2·0 mg/kg also caused a transient fall and subsequent rise in arterial pressure. The degree and duration of the fall in pressure were related to the dose given and were greater and longer lasting after cutting the vagus and sympathetic in the neck. In conscious animals, doses of pentazocine (1–2 mg/kg intravenously) caused an increase in heart rate, prolongation of the QT interval, a marked reduction in voltage with widening of the QRS complex and abnormalities of the T wave. Ventricular tachycardia occurred in two animals.

Pentazocine reduced the force of contraction of the heart isolated from the rabbit, the dose required to produce a 50% reduction being approximately 350 μg; with this dose the maximum effect occurred within 30 s and wore off gradually over 6–7 min. The heart rate was slowed but this effect was less marked and of shorter duration than the effect on contractile force. Coronary flow was measured as a drop rate; this slowed very briefly, recovering completely within 30 s.

Apart from its effects on the heart, pentazocine also had local anaesthetic properties and acted as a non-competitive anatagonist of acetylcholine and histamine on the guinea-pig ileum.

It is suggested that the cardiovascular effects of intravenous pentazocine in the intact animal are due to a direct depressant action of the drug on the myocardium modified by secondary reflex sympathetic activity.

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Cardiovascular actions of Wy 21901, a new hypotensive and anti-arrhythmic agent

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β-Adrenoceptor blocking drugs are well known as anti-arrhythmic agents, and have