EFFECT OF THE TYPE OF PREMEDICATION ON THE CARDIOVASCULAR EFFECTS OF INOLIN

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Changes in the cardiovascular effects of inolin (AQL-208) were studied in 77 experiments on intact and anesthetized dogs. These changes during endotracheal ether–oxygen anesthesia were shown to depend on the type of premedication. Premedication with morphine and atropine and also with morphine and chlorpromazine potentiates the cardiovascular effects of inolin.

KEY WORDS: inolin; cardiovascular system; morphine; atropine; chlorpromazine.

Inolin (-)-1-(3,4,5-trimethoxybenzyl)-6,7-dihydroxy-1,2,3,4-tetrahydroisoquinoline, (AQL-208) is a β-adrenomimetric and is recommended for use as a broncholytic agent [3-8].

Since broncholytic agents are used during anesthesia, it is important to study the effects of inolin in relation to the type of premedication.

EXPERIMENTAL METHOD

Altogether 77 experiments were carried out on intact and anesthetized dogs. The animals of series I received morphine (10 mg/kg), in series II the morphine was combined with atropine (0.1 mg/kg), and in series III morphine was given together with chlorpromazine (5.0-8.0 mg/kg). Anesthesia was induced with thiopentalsodium or hexobarbital (10 mg/kg) and basal anesthesia was maintained with an ether–oxygen mixture in stage III_1 and during the period of awakening. The depth of anesthesia was monitored clinically and by the EEG; the degree of oxygen saturation of the blood was determined oxyhemographically.

Inolin in doses of 0.001 and 0.005 mg/kg was injected into the femoral vein. The rate of the blood flow in different parts of the circulation [1] and the arterial and venous pressure in the femoral vessels were determined, and the ECG in three standard leads and the pneumogram were recorded. The numerical results were analyzed by the indirect differences method [2].

EXPERIMENTAL RESULTS

Injection of 0.001 mg/kg inolin after morphine did not change the velocity of the blood flow. A depressor–pressor response, tachycardia, and slowing and deepening of respiration were recorded. An increase in the dose of inolin (0.005 mg/kg) led to disappearance of the pressor phase and an increase in the hypotensive and positive chronotropic responses. In this series of experiments on anesthetized dogs the blood flow in the territory drained by the anterior vena cava was slowed, but that in the system of the posterior vena cava was considerably accelerated. The circulation time after injection of inoline was 9.9 ± 1.27 and 8.4 ± 1.79 sec, respectively, compared with initial levels of 5.6 ± 1.04 and 17.2 ± 1.36 sec ($P < 0.05$). The total circulation time of the blood was reduced from 20.7 ± 1.51 to 12.3 ± 1.39 sec ($P < 0.01$). During anesthesia the latent period of the vascular response to inolin was shortened, whereas the hypotensive phase and the heart rate were increased. Increasing the dose of inolin reduced the degree and dura-

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tion of the hypotensive response and also the heart rate. Irrespective of the dose, during anesthesia inolin restored the normal frequency and depth of respiration.

Injection of inolin after morphine and atropine into unanesthetized dogs significantly reduced the pulmonary circulation time from 6.2 ± 1.68 to 3.0 ± 0.39 sec ($P < 0.01$) and increased the circulation time in the vessels draining into the anterior (from 4.04 ± 0.57 to 7.6 ± 1.48 sec; $P < 0.05$) and posterior vena cava (from 5.1 ± 1.81 to 14.0 ± 3.72 sec; $P < 0.02$); the total circulation time was increased after injection of inolin. During anesthesia, after the same premedication, injection of inolin did not change the blood flow velocity in the pulmonary vessels, but slowed the blood flow in the vessels draining into the anterior vena cava (from 3.7 ± 0.78 to 12.6 ± 1.74 sec; $P < 0.01$) and accelerated it in the system of the posterior vena cava (from 11.3 ± 0.81 to 7.5 ± 0.34 sec; $P < 0.01$); the total circulation time was unchanged.

After morphine and atropine, the latent period and magnitude of the pressor effect of inolin were reduced in intact and anesthetized animals, the strength and duration of its depressor effect were increased, a negative chronotropic response appeared, and the normalizing effect of inolin on respiration was absent.

Injection of inolin after morphine and chlorpromazine into unanesthetized dogs did not change the velocity of the regional blood flow; the latent period of the vascular action of inolin was shortened, the duration and strength of the hypotensive and positive chronotropic effects were increased, and the pressor phase of the response was absent. In the anesthetized animals of this series injection of inolin increased the overall velocity of the blood flow by accelerating the blood flow in the vessels draining into the posterior vena cava (the total circulation time for vessels of the whole body was reduced from 20.9 ± 1.45 to 13.6 ± 1.77 sec; $P < 0.02$, and in the vessels draining into the posterior vena cava from 17.7 ± 0.84 to 7 ± 1.16 sec; $P < 0.01$). Under these circumstances the duration and intensity of the tachypnea were reduced and the heart rate was slowed.

The cardiovascular effects of inolin during anesthesia thus depend on the type of premedication.

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