With this method it has been demonstrated that the control incidence (saline premedication) of 18% nausea and vomiting during the first 6 post-operative hours is increased to 60% by 10 mg morphine and to 64% by 100 mg pethidine. Table 1 shows some of the findings with pethidine (100 mg) and with pethidine combined with anti-emetic premedication.

The doses of the anti-emetics were those commonly used in clinical practice. In this data when nausea and vomiting occurred together this was recorded as vomiting which also included retching. While many compounds reduce the incidence of vomiting, of those studied perphenazine was the only one to reduce markedly the incidence of nausea, and it was the most effective anti-emetic, even in doses of 2·5 mg. Similar studies are being carried out with morphine 10 and 15 mg as the stimulus.

If enough patients are available, this is a reliable method of studying anti-emetics and it can also be used to compare the emetic action of different opiates, different doses of the same opiate, or other drugs which can be given as premedication.

REFERENCE

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A method of inducing stress for the assessment of drugs in man

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Conventional monitoring has proved inadequate for the assessment of circulatory homoeostasis in anaesthetized patients since it gives no indication of failure until collapse is imminent.

Accordingly a method of inducing stress which it was hoped would reflect circulatory reserve was devised and investigated. The stress used was the application of a sudden sharp increase in intra-thoracic pressure and is a modification of the original manœuvre described by Valsalva. After consent had been obtained the method was tested in eight male patients whose average age was 57 years (range 35 to 72) and who represented a cross-section of anaesthetic risk from good to poor. After premedication with pentobarbitone (200 mg intramuscularly) anaesthesia was induced with 5% thiopentone (250–500 mg intravenously) and intubation carried out after the injection of suxamethonium (40–100 mg intravenously). Anaesthesia was maintained with halothane and oxygen in a semi-closed circle system with carbon dioxide absorption. An Aga pressure relief valve prevented the pressure in the circuit ever exceeding 40 cm H_2O when the system was completely closed at intervals during anaesthesia. Simultaneously, and with the reservoir bag compressed, a high-flow oxygen supply was fed into the circuit. This had the effect of immediately raising the intra-thoracic pressure to 40 cm H_2O, where it was maintained for 30 s.

A single non-conventional e.c.g. chest lead was used to check the heart rate and rhythm. The blood pressure was measured from a catheter inserted percutaneously into the radial artery and the right atrial pressure was measured by means of a polyethylene catheter threaded into the right heart from a superficial vein. A volume plethysmograph attached to a finger indicated peripheral blood flow. All four variables were suitably displayed and charted.

The application of positive intra-thoracic pressure caused a transient slight rise in blood pressure of about 4 s duration followed by a steep fall to less than 50 mmHg. When the intrathoracic pressure was released a further slight fall occurred for 4 s followed by a prompt recovery with overshoot in fit, lightly anaesthetized patients. The time taken for the systolic pressure to reach the previous diastolic level equalled that needed for recovery. In poor risk patients, in those deeply anaesthetized with halothane and in those given certain autonomic drugs recovery time was increased by a factor of up to 10 and the overshoot was modified or abolished.

Experience has shown that under certain conditions the stress could constitute a danger to the patient. Accordingly work is proceeding in an attempt to shorten the duration of the stress but still be able to predict the future course of the system.

During the manœuvre the pulse rate changed little, the right atrial pressure rose by up to 30 cm H_2O and the plethysmograph pressures reflected the atrial pressure.

The manœuvre has the potential of being a repeatable non-invasive monitoring technique without the need for calibration.

The effect of ingested alcohol on hand blood flow in resting man

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The relationship between blood alcohol concentration and hand blood flow was studied in fourteen healthy volunteers of both sexes with a mean age of 25 years (range 19 to 37 years). Twelve of the subjects were studied twice at intervals of 2 to 8 weeks. All studies were carried out with the volunteers fasted and resting. Hand blood flow was determined by water displacement venous occlusion plethysmography. For the duration of the experiment the temperature of the plethysmograph, the environmental temperature and the humidity remained constant. Plethysmograms were collected in batches of six at 5 min intervals throughout the study. A suitably programmed digital computer calculated individual blood flows and the mean value for each batch, and plotted the means as a function of time. At the end of each collection a blood sample was obtained from an indwelling catheter inserted percutaneously into a superficial vein on the dorsum of the opposite hand. The concentration of alcohol was determined by a modification (Payne, Foster, Hill & Wood, 1967) of the gas chromatographic technique devised by Curry, Walker & Simpson (1966). After a 30 min control period during which resting blood-flow values were determined for each subject, the volunteer drank in 2 to 3 min 100 ml 70% proof whisky diluted with 100 ml water.

The mean ($\pm$S.E.M.) resting blood flow for the group was (8·29$\pm$4·74 ml/100 ml)/min derived from forty-two individual measurements on each subject. During the period of drinking the blood flows fell so sharply in every subject that measurement was impossible; thereafter they rose steadily to reach a maximum mean value of (17·36$\pm$10 ml/100 ml)/min in 33$\pm$15 min. In twelve of the fourteen volunteers the maximum blood flow coincided almost exactly with the peak alcohol concentration in the blood. The mean value for the peak blood alcohol concentration of 89·76$\pm$40 mg/100 ml was reached in 34$\pm$13·6 min.

A characteristic feature of this study was the fact that although the pattern of response differed widely from one individual to another, for example the peak alcohol