CURRENT COMMENT

STUART C. CULLEN, *Editor*

Anileridine as Preoperative Medication

Drs. Lulu H. Warner and M. Gene Black of Holyoke, Massachusetts, tested the value of anileridine for preoperative medication, using meperidine (Demerol) and promethazine (Phenergan) for comparison. A blind test was made so that the 3 drugs were known to the investigators only by number.

They studied a group of 206 patients who represented consecutive admissions of males and females between the ages of 20 and 50. Drug number 1, meperidine, was given in doses ranging from 75 to 125 mg.; drug number 2, promethazine, was given in doses ranging from 15 to 30 mg., and drug number 3, anileridine, was given in doses ranging from 20 to 40 mg. The only other medication given was atropine 0.4 mg. The selected drug plus atropine was administered one hour before surgery.

Fifty-five patients received meperidine in doses ranging from 50 to 125 mg. Of these 7 were wide awake and apprehensive on arrival in surgery, 9 were sleeping and 39 were awake but drowsy and tranquil. Three complained of nausea and 3 complained of headache. In 3 cases the induction of general anesthesia was accompanied by coughing and mild laryngospasm and one case showed an increase in secretions. The last 4 complications occurred in patients who were either sleeping or drowsy on arrival in the operating room.

Sixty-five patients received promethazine in doses ranging from 15 to 30 mg. Of these, 16 were apprehensive, 4 were sleeping, and 40 were drowsy and tranquil. Two complained of nausea. There were no headaches in this group. Six cases showed a stormy induction with general anesthesia.

Eighty-six patients received anileridine in doses ranging from 10 to 40 mg. Of these, 6 were apprehensive, 12 were sleeping, and 68 were drowsy and tranquil. One complained of nausea and one of headache. Two patients showed increased secretions during the induction of general anesthesia, otherwise all inductions were smooth.

The most striking result in the study was the incidence of serenity and tranquility, 93 per cent, observed in the patients given anileridine. Only 6 of the 86 patients were awake and apprehensive. Thirty-three patients received doses of 25 to 30 mg., and 90 per cent of these were asleep or drowsy. Thirty-seven patients received 35 to 40 mg., and 97 per cent of these were asleep or drowsy . Thirty-nine patients received 100 to 125 mg. of meperidine and 87 per cent of these were tranquil. In this study 25 to 30 mg. doses of anileridine were equivalent in sedative properties to 100 to 125 mg. of meperidine. Only 67 per cent of patients receiving promethazine in doses of 15 to 30 mg. were drowsy.

GADGETS

Electric Current Resuscitator

Dr. Lewis H. Lambert, of Hanover, New Hampshire, reports that recently there has appeared on the market a new type of electric current resuscitator, the Electronic Resuscitator, based on the principle of electrical currents causing diaphragmatic movements with resultant movement of gases in and out of the lungs. According to the manufacturer the current provided consists of a damped oscillation, so highly damped that the first half pulse is predominant. The duration of this short pulse is in the order of micro-seconds. The current is approximately 20 micro-amperes at maximum, with a voltage of 0 to 60,000 volts. The current is applied to the body by means of a glass electrode filled with

an inert gas under negative pressure which provides a condenser type coupling to the body. The entire electrode is fitted into a sponge and measures approximately 5 × 8 inches, which is placed on the anterior surface of the body over the celiac plexus. An indifferent metal electrode is placed any place on the body. The machine has one adjustment—for intensity of current, the rate being set by the manufacturer.

Dr. Lambert measured the minute volume of gases moved by the Electronic Resuscitator in the unconscious, non-breathing subject.

Six patients were anesthetised with 2.5 per cent thiopental sodium mixture. An oral airway was provided to insure free passage of air. With a conventional tight-fitting face mask the patient was connected to a Heidbrink anesthesia machine using a closed circle absorption technique. An Emerson Breathometer was placed in series with the patient and the anesthesia machine.

Under thiopental sodium anesthesia, and breathing 100 per cent oxygen, the minute breathing volume was recorded. The subject was then vigorously hyperventilated for a period of one minute and the ensuing interval of apnea was measured. Hyperventilation was again performed for a period of one minute. Immediately, the glass electrode with moistened sponge cover was applied according to instructions on the inside cover of the machine, and the resuscitator placed in operation. Various intensities of currents were used. The minute volume under these conditions was recorded. No muscle relaxant drugs were used during these studies with the exception of two additional cases. These two patients were studied in a like manner with the exception that 40 mg. of succinylcholine were used to produce apnea instead of hyperventilation technique.

In one patient, a measurable flow of gas did not appear until 30 seconds after application of electrode. Increasing the intensity of the current applied did not produce increased flow in this subject. Another patient developed laryngospasm following application of the stimulator and the study was discontinued.

Stimulation was continued on all subjects until breathing was resumed on their own at approximately the end of the previously measured period of hyperventilation apnea. In all but one subject, when respiratory effort was resumed, it was out of phase with the stimulating current.

In each case the applied current intensity was increased to the point at which marked contraction of the lower intercostal and abdominal recti muscles were observed. It appeared that for the subjects in which some gas was moved, the movement coincided with the forceful intercostal and recti contraction, that is, as an expiratory movement.

The use of thiopental anesthesia was selected for this trial for two reasons. First, it was felt that any possibility of pain or discomfort should be eliminated as a respiratory stimulus. The influence of pain on the mechanics of breathing in the conscious patient is well documented. Secondly, thiopental sodium, an ultrashort acting barbiturate, would serve to produce unconsciousness similar to that of barbiturate poisoning, although in this study the depth of anesthesia was never carried to the level of vital function depression.

Hyperventilation apnea was considered a logical, even an ideal condition under which to conduct an evaluation of this apparatus. According to the manufacturer the operation of the machine depends on an intact reflex arc and would not work in the presence of a myoneural blocking or deplorarizing agent or in disease states which interfere with nerve conductivity.

Since the use of an emergency resuscitator is primarily for unconscious nonbreathing subjects, it was felt that the conditions created for this test were adequate and paralleled the situation that might be encountered in actual emergency resuscitative problems, except that nerve conductivity on which the operation of this machine depends is, if anything, enhanced as opposed to the depressant effect on conductivity of actual asphyxia.

On all subjects studied under the conditions of these observations, the Electronic Resuscitator failed to move a minute volume of gas even closely approaching the pretest measured minute volume for each subject.