

required the use of a tracheal catheter for resuscitation. Six other babies who showed evidence of asphyxia responded to carbogen inhalations. . . .

"The combination of nembutal and scopolamine, . . . can be used with safety to induce analgesia in labor. Patients with this type of analgesia require constant supervision. The length of the first stage of labor is not increased, the length of the second stage of labor may be increased due to lack of cooperation with the expulsive powers, hence more outlet forceps are necessary." 3 references.

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POTTER, ROBERT; LIVINGSTONE, HUBERTA; ANDREWS, EDMUND, AND LIGHT, GERALDINE: *Blood Ether Levels in Surgical Anesthesia*. Surgery 10: 757-765 (Nov.) 1941.

"Since the first use of ether as a human anesthetic agent by Long in 1842, many determinations have been made in animals and a few in man to ascertain anesthetic and lethal levels. The problem has been approached mainly in two ways: (1) by measuring the ether vapor concentration in air, either as administered for anesthesia or as the alveolar tension when exhaled, and (2) by measuring the ether concentration in blood samples taken during anesthesia. . . . The criteria for 'surgical anesthesia' varied with the different workers. Muscular relaxation, loss of pain response, alteration of corneal or deep reflexes, character of respiration, etc., were considered among the criteria. . . . There is apparent disagreement among the various workers as to the effect of morphine or morphine-scopolamine or other premedicant drugs on the blood ether levels required for surgical anesthesia. . . . It is the general belief among many surgeons and anesthetists that the preoperative administration of morphine alone or in combination with atropine

or hyoscyne materially reduces the amount of ether required to produce surgical anesthesia and shortens the induction time, in addition to quieting the unrest of the patient in anticipation of the operation and providing some analgesia immediately postoperatively. It is probable that this concept has developed from clinical observation and does not represent controlled investigation. In this study we have attempted to evaluate the effect of morphine alone, or in combination with hyoscyne or atropine on ether levels in surgical anesthesia. With a simple, rapid method for determining blood ether concentration at our disposal, determinations were made on patients using various methods of administration of ether anesthesia both with and without premedication. Special emphasis was placed on bringing the patients to the same level of anesthesia as determined by the clinical signs described by Guedel. The various groups were compared in an attempt to evaluate the effect of premedication on the concentration of ether in the blood. . . .

"Consecutive patients receiving ether anesthesia were used in this study. They included neurosurgical, upper and lower abdominal, plastic and tonsil cases. The ages varied from 5 to 70 years. Premedication consisted of morphine alone, morphine-atropine, or morphine-hyoscyne, and codeine in the case of young children. These drugs were administered in the usual clinical doses of 0.010 to 0.015 Gm. of morphine, and 0.0003 to 0.0004 Gm. of atropine or hyoscyne. Codeine ranged from 0.02 to 0.03 Gm. In every case the premedication was administered twenty to forty-five minutes before the induction of the anesthetic. A small series received avertin as basal anesthetic, and some patients received no premedication. Four different anesthetic methods were employed: (1)

induction and maintenance with open-drop ether on a Schimmelbusch face mask designated as 'drop alone'; (2) short semiopen induction with nitrous oxide-oxygen for two to five minutes, followed by open-drop ether on a Schimmelbusch face mask, designated as 'nitrous oxide-oxygen to drop'; (3) short semiopen induction with nitrous oxide-oxygen followed by a closed system with ether dropping in a rebreathing bag; there was maintenance flow of oxygen, and soda lime absorption of carbon dioxide, designated as 'closed metric'; (4) semiopen induction with nitrous oxide-oxygen, followed by constant flow of nitrous oxide and oxygen over ether, designated as a 'semiopen N_2O-O_2 constant flow with ether.' Ethylene could not be used as an induction agent as it appeared in the blood samples, and was found to be present, although not quantitatively, in the analysis. . . . The selection of a standard level of anesthesia in an assay such as this is extremely difficult. . . .

"In this work we attempted to use the signs regularly employed in anesthesia, both because they represented a convenient and commonly accepted method and because of the greater familiarity of the anesthetists with these signs. Muscular relaxation, character of respiration, eye signs, and absence of superficial reflexes, as defined by Guedel, were employed as criteria of the depth of anesthesia. All blood samples were drawn at the second plane of the third or surgical stage of anesthesia. These were taken after the induction and before the operation was begun and after careful selection of the anesthetic stage by one of three experienced anesthetists. The subsequent course of the anesthetic was checked, and in cases where it was apparent that the stage had been incorrectly designated, the samples were rejected. . . . Because the samples were always taken under comparable conditions,

after smooth inductions and at apparently the same stage of anesthesia, and because the ether administration was stopped during the time of determination of the stage and drawing of the sample, it is fair to state that the samples are of clinical value, and if not representing a state of equilibrium, at least are close to it. . . .

"From this series a number of observations may be made. The premedication used had little effect on the time required for the production of surgical anesthesia or on the amount of ether used. Certainly the medication did not markedly shorten the induction period; in fact, there was a slight increase in the induction time. . . . There was a wider divergence in blood ether levels in the presence of premedication. This is probably due in part to the obscuring of some of the anesthetic signs, since more difficulty was experienced in determining exactly the anesthetic stage after premedication. . . . Comparison by graphic and statistical methods reveals that patients without premedication, or with commonly used premedication, show no significant variation in blood ether levels at the second plane of third stage anesthesia. Morphine in the dosages commonly employed does not appreciably decrease the time of, nor increase the ease of, induction with ether and often obscures the signs of anesthesia so that frequently higher ether levels are found after its use. Blood ether levels without premedication at the second plane of the third stage of anesthesia vary from 50 to 130 mg. per cent, the greatest number falling between 80 and 100 mg. per cent." 29 references.

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BURGEN, A. S., AND SCHOFIELD, E.: *Dental Anaesthesia and Oxygen Lack*. Brit. Dent. J. 71: 303-306 (Nov.) 1941.

"Experiments . . . were originally