

less stridor. During experiences with these inhalation anesthetics it was observed that an airway moved about during manipulations and set up laryngospasm. Breath holding or laryngospasm developed when back and chest muscles were worked on. When the patient with parietic respiratory muscles is lying on his face, pressure on the breathing bag is necessary to avoid cyanosis.

Fifteen of the patients who had pentothal exhibited trembling during light anesthesia. Those who trembled during induction trembled again during recovery. Eleven patients who had pentothal had signs of early shock but only two showed signs of moderate shock. One patient's face became yellow; there were no other signs of trouble. Another patient had a greyish pallor and the respiratory rate increased to 50 per minute when the pentothal was pushed. Neither of the last two reactions is explainable.

Of the whole group, 8 per cent developed shock as compared to 2 per cent of those who received pentothal. Twenty-three patients who asked for them were given spinal anesthetics. Four of these had headaches following the anesthetic. There was one case each of hiccough and dry cough in the entire series. 4 references.

F. A. M.

LEMMON, W. T.: *Continuous Spinal Anesthesia in Abdominal and Thoracic Surgery*. Delaware State M. J. 19: 109-115 (June) 1947.

"On April 10, 1939, we gave our first continuous spinal anesthesia to a patient. . . . We have now used this anesthesia in more than 4,000 cases. As our experience has increased, we have extended the field of usefulness of this type of anesthesia. . . . We now use it in thoracic, breast, and upper extremity operations. . . . In breast amputations there is less bleeding, less renal

and respiratory irritation, and a much more rapid convalescence than when general anesthesia is used. . . . Difficulties with this method of spinal anesthesia are usually due to improper spinal puncture or insufficient dosage of the drug. . . . The average healthy adult gets 3 grains nembatal at eight o'clock the evening before operation. . . . Three hours before operation, 3 grains of nembatal is given. One hour before operation a hypodermic injection is given containing  $\frac{1}{4}$  grain of morphine sulfate, and  $\frac{1}{100}$  grain of scopolamine hydrobromide. These doses are varied according to the individual patient. . . . We do not increase the above dosage. If patients are not sufficiently sedated,  $\frac{1}{8}$  grain of morphine sulfate is given intravenously, and is repeated as often as necessary.

"The patient is placed on a specially designed mattress. . . . The operating table, with mattress and patient, is placed in 3 degrees Trendelenburg position. The patient is turned on one side with back towards the opening in the mattress, and thighs are flexed on abdomen. . . . The third, fourth, or fifth lumbar interspace is infiltrated with an intradermal injection containing novocaine 2 per cent and ephedrine. The ampoule contains 1 cc. of 2 per cent novocaine and 50 mgs. of ephedrine, and after the skin is infiltrated the remainder is injected hypodermically and into the interspinous ligament. The skin is now punctured using a Sise introducer. A malleable needle, No. 18 or 19 gauge, is now introduced into the subarachnoid space and a free flow of spinal fluid obtained. A stilette is not used in the needle. Ten cc. of spinal fluid is removed by attaching a 10 cc. Luer-Lok syringe to the needle in the subarachnoid space. The syringe is detached, and the flow of spinal fluid is controlled by attaching a Luer-Lok plug. A

needle is attached to the 10 cc. syringe containing 10 cc. of spinal fluid and this fluid is thoroughly mixed with the novocaine crystals in the 500 mg. ampoule. . . . The dissolved crystals are now removed from the ampoule into the syringe which is attached to 30 inches of rubber tubing. It takes 2 cc. of this solution to completely fill this rubber tubing. The stopcock, which is connected with the syringe, is now turned to cut off the flow of solution. There will be 8 cc. of solution remaining in the syringe and 2 cc. in the 30 inches of rubber tubing. The plug is now removed from the needle in the spine, and the rubber tubing, with attached syringe, is connected with the spinal needle.

"The stopcock is turned to open, and by gentle traction on the plunger of the syringe a free flow of spinal fluid is obtained. Sometimes the spinal fluid flows itself, pushing the plunger of the syringe outward. When we dissolve 500 mgs. of novocaine in 10 cc. of spinal fluid we get a 5 per cent solution, each cc. of which contains 50 mgs. of novocaine. The usual initial dose of novocaine is 150 mgs.; 3 cc. of this solution is slowly injected. The desired height and degree of anesthesia should be obtained in five or ten minutes. The patient is now placed into the position desired for operation. As soon as that position is assumed, the flow of spinal fluid is tested to be sure it is free. The operative area is prepared, draped, and the operation begun. Every thirty minutes 1 cc. of spinal fluid is aspirated to be sure of a free flow, and 2 cc. returned to the subarachnoid space. This gives a dose of 1 cc. containing 50 mgs. of novocaine. Sometimes the novocaine must be given more often than 30 minute intervals, and in doses more than 50 mgs. in order to maintain perfect anesthesia. The proper dose is enough to produce the desired level and de-

gree of anesthesia, and this varies greatly."

F. A. M.

LINDROTH, L. V.: *Sympathetic Nerve Block in Hypertension and Allied Cases*. *Am. J. Surg.* 74: 66-68 (July) 1947.

For the past four years the alcohol nerve blocks have been performed for hypertension. The injection method is simpler of performance and less traumatizing than resection by surgery. Ganglion block for hypertension is done in 2 stages. The first stage is done after a thorough physical check-up which includes, among other tests, a series of blood pressure recordings. Morphine gr. 1/6 and scopolamine hydrobromide gr. 1/200 is given one hour before the block. The patient is anesthetized with cyclopropane. Blood pressure readings are made before, during and after the block. With the patient lying prone the points for injection are mapped out with a china glass pencil. "Each spinal needle is then inserted so that it impinges upon the transverse process. It is then withdrawn slightly and with a downward and inward tilt it is passed beneath the transverse process for a distance of approximately 1 cm. All of the 6 needles are . . . placed into the sites of the eighth to twelfth thoracic and first lumbar ganglia. Five cc. of 1 per cent novocaine is then injected into the first lumbar needle and that needle is withdrawn, leaving 5 needles in situ. Thereafter, 4 cc. of absolute alcohol is injected into each of the remaining needles. As soon as the absolute alcohol is injected the needle is withdrawn. Aspiration before injecting any solution assures that the needle is not through the pleura or in any vessel. If the blood or air is obtained replace that needle before injecting the solution. The injection of the novocaine into the lumbar site pre-