

the tube towards the glottis, which can thus be sprayed readily. When this has been done an endotracheal tube can be passed readily through nose or mouth either blindly or by direct vision. To prevent siphoning, the glass container of the spray hangs lower than the nozzle; and, since the glass container always hangs downward, the spray can be held in any position. . . . I use a weaker solution of cocaine than that generally advocated. Analgesia from a 3-4 per cent solution is slightly slower in onset and shorter in duration than from the 10-20 per cent solutions commonly used, but otherwise is equally effective. One cc. of 10 per cent cocaine is placed in the container, and 2 cc. of tap water is added. I usually use the lot—100 mg. of cocaine hydrochloride. . . . A cough or interruption of the patient's regular breathing is a sure sign that the spray has found its target. . . .

"If bronchoscopy is to be performed, the nozzle is directed through the cocaineized larynx well down into the trachea. The bulb is squeezed on inspiration to ensure that the inspiratory air stream carries the spray at least as far as the carina. Using this technique, members of this department have sprayed themselves and passed endotracheal tubes blindly on themselves without any difficulty." 3 references.

F. A. M.

LEWIS, N. H.: *Anesthesia for the Chronic Poliomyelitis Patient*. California Med. 6: 168-170 (Sept.) 1947.

Anesthetics were administered during 3 phases of surgical treatment of 370 chronic or "old" poliomyelitis patients. The operations were done by Harvey E. Billig, M.D., of Pasadena, California. The first phase included 71 cases of surgical nerve motor axon interruptions. The anesthesia for this

phase was mainly cyclopropane and oxygen and operations lasted from one to four hours. One hundred and ninety-five cases were treated by "manual manipulation." In this second phase the patient is shaken severely and there is heavy pressure when the thorax, back and abdomen are worked on. The third phase consists of 104 patients; 96 of them received pentothal sodium and 8 small children were given ether. In this phase a pneumatic drill is used and the explosion hazard explains why pentothal is the anesthetic of choice.

The poliomyelitis patient is flabby and weak-muscled, his heart muscle is flabby as evidenced by the fact that bradycardia under cyclopropane and oxygen anesthesia is not common. The pulse rate increased steadily in rate after an hour or so of anesthesia. Weakened muscles of respiration and scoliosis with twisting of the thorax on the abdomen are common. Most poliomyelitis patients are tense and sensitive. Because of these factors these patients may be considered only as fair risks as far as anesthesia is concerned. Medication should be minimal. Nembutal, 100 mg., the night before surgery and again one and one-half hours before surgery was given to the adults. A hypodermic of morphin 12 to 16 mg. and atropin 0.3 mg. to 0.4 mg. was given one hour before surgery.

Cyclopropane worked well for the operations in the first phase. Sixty-three of 110 patients developed excessive vomiting lasting four to twenty-four hours. Cyclopropane and oxygen was not adequate for the operations in the second phase where the procedure interfered with breathing and prevented smooth anesthesia. Stridor and laryngospasm developed. Combinations of nitrous oxide or ethylene with ether after cyclopropane induction made for smoother anesthesia and

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 paretic 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 hicough 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 nembutal at eight o'clock the evening before operation. . . . Three hours before operation, 3 grains of nembutal is given. One hour before operation a hypodermic injection is given containing $\frac{1}{4}$ grain of morphine sulfate, and 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