AN ANALYSIS OF ANESTHESIA ADMINISTRATION FOR 1950

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IN 1948, type and methods of administering anesthesia at the Cleveland Clinic Hospital were compared with those of the previous 2 years.[1] Observations were made on the trends as determined from procedures used in the years prior to 1946. The present analysis compares methods and procedures utilized in 1950 with those of 1947. This report for 1950 is based on 8085 anesthetic procedures.

Figures in table 1 indicate the total number of times an agent was used, whether alone or as the primary agent, or as a supplementary agent. The sum of these figures, of course, is greater than the total number of anesthetic procedures. Those agents in which there was a significant change in the number of times administered were curare and avertin. The use of curare increased from 2.9 per cent of the procedures in 1947 to 6 per cent in 1950. Avertin was used in 2.4 per cent of the procedures in 1947 as compared to 1.2 per cent in 1950. The decrease in the use of avertin reflects a trend to the increased use of rectal pentothal in producing basal anesthesia. Pentobarbital (nembutal) is being used more frequently in the sedation of patients in whom spinal anesthesia must be supplemented. A hypobaric solution of pontocaine (0.2 per cent in distilled water) has replaced spinocaine, and epinephrine has replaced ephedrine as the vasopressor used intrathecally to prolong spinal anesthesia. The usual dose of epinephrine for this purpose is 0.2 mg.

Table 1

Anesthetic Agents	Times Used	Per cent
Pentothal	5064	62.6
Oxygen	4637	57.3
Nitrous oxide	3857	47.7
Procaine	2270	28.0
Cocaine	1695	20.1
Ether	1308	16.1
Pontocaine	1297	16.0
Epinephrine	769	9.5
Curare	491	6.0
Vinethene	330	4.0
Spinocaine	157	1.9
Metycaine	149	1.8
Ephedrine	117	1.4
Avertin	101	1.2
Nembutal	13	0.1

Table 2 represents an arbitrary division of the procedures according to the method of administration. The frequent combination of pentothal and curare

Table 2

Anesthetic Method	Times Used	Per cent
Combined (intravenous and inhalation)	2319	28.8
Spinal	1581	19.4
Inhalation	1530	18.8
Local	1279	15.9
Intravenous (pentothal)	1223	15.0
Caudal (and other regional)	153	1.8

with nitrous oxide and oxygen has resulted in the classification: combined (intravenous and inhalation). To avoid endless combinations, all other inhalation technics form one group. Any anesthesia in which ether is used is arbitrarily called an inhalation anesthesia, although the patient may also have received agents which would otherwise cause it to be classed as combined. No inhalation agents other than ether, nitrous oxide, vinethene, and oxygen are used.

Pentothal is used in most inductions in adults who are to be given ether anesthesia, and the use of intravenous or rectal pentothal for induction in children is increasing. In the present classification, "intravenous" includes only those procedures in which pentothal was the only agent administered by the anesthetist, even though some of the patients in this group were given local anesthesia such as topical cocaine for bronchoscopy by the surgeon. Local anesthetics were always administered by the surgeon and were removed from such a grouping if an anesthetist had to administer some other agent for anesthesia.

The number of patients receiving spinal anesthesia is so great it forms its own group. Spinal anesthesia was used in 20.5 per cent of the anesthetic procedures in 1947 and 19.4 per cent in 1950. Of the spinal anesthetics 7.7 per cent utilized the intrathecal catheter technic for continuous or intermittent administration of the anesthetic agents. Continuous spinal anesthesia had decreased from 198 administrations in 1946 to 79 in 1947. During these years, as well as in 1948 and 1949, the malleable needle technic was employed. However, the use of continuous spinal anesthesia had been practically abandoned before 1950 when the catheter technic was first utilized.

Since it is not immediately apparent, it should be pointed out that fewer patients received spinal anesthesia for upper abdominal operations than in the preceding years, but the number of poor risk patients who receive continuous spinal anesthesia have almost made up the difference.

Because of the increased safety and ease of administration of the latter, few regional procedures are carried out other than caudal and transsacral injections. But even here the use of hypobaric pontocaine in water has almost re-

placed caudal anesthesia for proctologic operations. Of the 153 regional anesthetics, all were caudal and intercostal blocks.

Special procedures in anesthesia are attempts to make anesthetic procedures safer for the patient and at the same time to provide better relaxation for the surgeon. Endotracheal administration of anesthetic gases, or simply of oxygen, has firmly established itself as a necessity in numerous operative procedures and desirable in many others. The endotracheal tube was used 65 times in 1946 and 157 times in 1947. However, in 1950, intubation was carried out in 976 patients (nasal route in 135, oral in 841). Not all procedures continue to increase in favor with frequent use. Controlled hypotension by arteriotomy, although still considered safe and apparently sound physiologically, was used 17 times in 1946 and 60 times in 1947 but only 16 times in 1950. Conversely, arterial transfusion continues to gain favor under circumstances in which extreme blood loss requires rapid replacement of blood volume to the arterial tree. Pressure is unhesitatingly employed to accelerate the flow of fluids into the vein when indicated. A MacIntosh safety dropper is used in all pressure infusions to avoid the danger of air embolism.

Transtracheal application of cocaine to the upper trachea, larynx, and pharynx was begun in 1950 and was found to be a safe and efficient method of anesthetizing these structures so that intubation might be carried out at a lower plane of general anesthesia. Indeed, when necessary it has been found more effective and less painful and stimulating to the conscious patient than the usual method of spraying these areas.

Ether was administered only once by vein in 1950, but 5 times in 1947 and 4 times in 1946.

Therapeutic and diagnostic blocks are not included in the total number of anesthetic procedures for operations but are summarized in table 3.

Table 3

Blocks	Times Used
Caudal	180
Paravertebral sympathetic	174
Spinal epidural	120
Intercostal	68
Local infiltration	33
Stellate	19
Phrenic nerve	18
Splanchnic	18
Spinal anesthesia	11

Procaine was given intravenously 92 times for such conditions as rheumatoid arthritis, pruritus of jaundice, and atopic dermatitis. This procedure was used 27 times in 1947.

Recovery Room

The recovery room affords postanesthetic care to hospital and out-patients, including all patients recovering from general anesthesia, or any patient

needing close observation after surgery. Patients remain in the recovery room until they regain consciousness and the blood pressure has become stabilized. It is highly desirable that patients be kept here if any vasopressors are in use.

Maintenance of airways and safe blood pressures are the chief problems of the recovery room. Equipment is kept in readiness for simple transfusions or intra-arterial infusions. Necessary instruments for intubation or tracheotomy are available. Oxygen outlets provide a ready source of oxygen for mask, resuscitator, or catheter. Wall outlets for suction are adjustable so that negative pressure is controlled to suit the need. For intestinal decompression a setting of minus 45 to 50 mm. of mercury is adequate but for pharyngeal suction the setting should be minus 200 mm. of mercury.

The recovery room is staffed by registered nurses assisted by aides, and physician members of the anesthesia staff are always available.

The recovery room has established itself in the esteem of both surgeon and anesthetist. It provides a high standard of professional care for the unconscious or seriously ill postoperative patient and contributes much toward the continued reduction of operative and anesthetic morbidity and mortality.

Reference

1. Curry, G. W. and Hale, D. E.: Statistical analysis of anesthesia at Cleveland Clinic. Anesthesiology **10**:101 (Jan.) 1949.