Halothane Anesthesia in a Patient with Acute Hepatic Disease

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The relationship of halothane anesthesia to the development of jaundice continues to be a subject of wide interest. The following case report describes a patient who was anesthetized with halothane four times in a five-month period, the last two during the prodromal phase of acute infectious hepatitis.

REPORT OF A CASE

A 58-year-old white woman was admitted to the hospital in May for generalized arteriosclerosis and vasomotor insufficiency of both legs. She had severe bronchitis and emphysema secondary to heavy smoking and recent weight loss. EEG and EKG changes were compatible with cerebral and coronary ischemia, and she was classified as physical status 3. Translumbar arteriogram under N₂O:O₂ and halothane anesthesia was performed with no complications.

In June the patient was readmitted for right femoral popliteal bypass graft, using the saphenous vein. Results of blood studies and SMA-12 multichemistry screen, including protein, bilirubin, alkaline phosphatase, blood urea nitrogen, lactic dehydrogenase, and SGOT, were within normal limits. Anesthesia lasted six hours and was accomplished with spinal and endotracheal N₂O:O₂ (50-50) with small amounts (less than 0.4 per cent) of halothane added. Respirations were assisted, and frequent aspirations of bronchial secretions were necessary. Two units of blood were given. The postoperative course was slow and was complicated by cardiopulmonary problems. Two months after discharge the patient returned to her part-time office job.

Four months later the patient was readmitted for ischemia of the left leg. Findings were as before except for progression of the cardiopulmonary insufficiency. The patient was now classified as physical status 4. Again, results of laboratory tests including SMA 12 multichemistry screen were within normal limits. The patient had an uneventful N₂O:O₂ and halothane anesthesia for a left iliopopliteal arteriogram. The following day she was lethargic and febrile, complaining of soreness over the parotid and maxillary glands, and her throat was red. There was considerable inflammation over the injection site in the left groin and tenderness in the left lower quadrant and over the femoral artery. With antibiotic therapy the patient's fever subsided in four days, but anorexia and lethargy persisted. Because of further deterioration of the circulation to the left leg, a left femoral artery bypass graft was scheduled. Anesthesia lasting 5½ hours was again accomplished with spinal and endotracheal N₂O:O₂ and 0.2 to 0.4 per cent halothane. Again, respirations were assisted and frequent tracheobronchial aspirations were needed. Two units of blood were given. The anesthetic course and first 24-hour postoperative period were uncomplicated, but at this time the patient developed rapidly-progressive jaundice, hepatomegaly, severe anorexia, and nausea with occasional vomiting. She then told her anesthesiologist that she had developed anorexia and malaise three days prior to this hospital admission and that several of her co-workers, including the woman with whom she rode to work, were in the hospital with severe acute infectious hepatitis. She had withheld this information fearing that her surgical operation would be postponed.

Total serum bilirubin was 7 mg/100 ml (direct, 4.7 mg/100 ml) and increased over the next ten days to 19 mg/100 ml (direct, 14 mg/100 ml). Lactic dehydrogenase rose as high as 180 units and alkaline phosphatase to 38 mg/100 ml. The diagnosis was acute infectious hepatitis. The clinical course was not as severe as expected from the laboratory findings. After 30 days the physical and laboratory findings were approaching normal values and the patient was discharged. Within two months all findings were within normal range and the patient returned to her job.

Seven months later the patient returned for lumbar sympathectomy and removal of a neuroma from her right thigh under spinal anesthesia, N₂O:O₂ and topical cocaine for tolerance of an endotracheal tube for assisting respirations and aspirating pulmonary secretions. This time she did not receive halothane. Her recovery was uneventful and she has again returned to her job, still having considerable physical limitations secondary to her poor cardiopulmonary status.

COMMENT

This patient, in poor physical condition, underwent major surgery during the prodromal phase of infectious hepatitis. Despite this, in view of her relatively benign hospital course...
it seems that halothane did not have an adverse effect on her hepatic status. Fortunately, this patient was able to give a reliable history of exposure to infectious hepatitis prior to her admission to the hospital, although her liver function tests had not yet become abnormal. Had this history not been available, this case might have been added to those classed as halothane-related hepatitis.

**REFERENCES**


**Nervous System**

**ACETYLCHOLINE SYNTHESIS** Choline (Ch) and acetylcholine (ACh) uptake and release were measured by a combination of tracer and bioassay techniques in the perfused superior cervical ganglion of the cat during rest and repetitive preganglionic stimulation. The uptake of labelled ACh as such was small, but when labelled Ch was present at physiologic concentration in the perfusion fluid, its incorporation into the ACh and free Ch pools of the ganglion proceeded linearly in the absence of stimulation, was accelerated by stimulation, and was inhibited by hemicholinium but not by hexamethonium. About half the Ch formed from released ACh was immediately recaptured and resynthesized into ACh. Although circulating Ch is converted into ACh when the ganglion is resting, and more rapidly during activity, Ch derived from the breakdown of released transmitter is also an important source from which ganglionic ACh is replenished. (Collier, B., and MacIntosh, F. C.: Source of Choline for Acetylcholine Synthesis in a Sympathetic Ganglion, Canad. J. Pharmacol. 47: 127 (Feb.) 1969.)

**ESOPHAGEAL DISTENTION** The autonomic regulation of motion in the esophageal smooth muscle of the opossum closely resembles that of man. Three different preparations of opossum esophagus were used: the esophagus in vivo, the isolated whole esophagus and isolated strips of the three layers of esophageal smooth muscle. Responses to localized distention and to electrical stimulation were examined. Distention of the esophagus in vivo with a balloon produced three separate responses: 1) a brief contraction rostral to the point of distention, the "on response"; 2) shortening of the esophagus, maintained for the duration of the distention, the "duration response"; 3) a single, brief circumferential contraction, propagated caudad, with deflation of the balloon, the "off response." In the isolated whole esophagus, distention and electrical stimulation of the muscle produced the same three responses. With electrical stimulation of isolated strips of the three smooth muscle layers, the muscularis mucosae and the longitudinal layer of the muscularis propria responded with a duration response only. The circular layer of the muscularis propria responded with on and off responses only. Such observations suggest that both types of stimuli excite the same afferent nerve fibers in local reflex pathways. Peristalsis may be maintained by these reflexes in the smooth-muscle part of the esophagus independent of central nervous system connections. (Christensen, J., and Lund, G. F.: Esophageal Responses to Distention, J. Clin. Invest. 48: 403 (Feb.) 1969.)