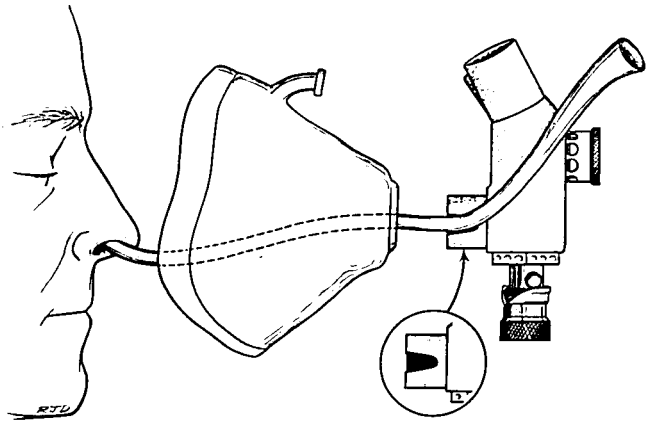

FIG. 1. Method of accommodating an intestinal drainage tube during circle absorber anesthesia.

pushed into the mask until it makes a snug fit. The tube remains patent and drainage is unimpeded.

BERNARD R. FINK, M.D., and DANIEL TAUSIG, M.D.,*
Department of Anesthesiology, Columbia University and Presbyterian Hospital,
New York, New York

REFERENCE

1. Emma, E., and Hershey, S. G.: Adapter for Use with Gastro-Intestinal Drainage Tubes During Inhalation Anesthesia, Anesthesiology 10: 643–645 (Sept.) 1949.

* Present address: North Shore Community Hospital, Manhasset, N. Y.

THE SPREAD OF DRUGS USED FOR SPINAL ANESTHESIA

No completely satisfactory clinical method has been described to determine the spread of agents in the subarachnoid space during spinal anesthesia. This report discusses the use of a small amount of radioactive iodine (I^{131}) added to the injected spinal anesthetic solution, to aid in this determination.

RESULTS

When isobaric solutions such as 1.0 to 2.0 cc. of 0.5 per cent nupercaine or 1.0 per cent Pontocaine® were injected with the patient in the lateral position, the highest concentration of the drug was found near the site of injection, between 15 cm. cephalad and 5 cm. caudad. There was practically no change in this determination after several minutes (fig. 1). Furthermore the drug does not disperse by any means (such as rapid injection, barbotage) except by changing the body position.

When hyperbaric solutions such as glucose-nupercaine (specific gravity 1.039 at 15 C.) were injected with patient in lateral position, and turned to supine position

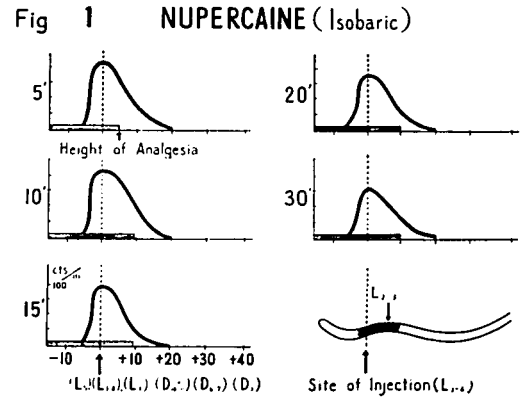

FIG. 1. The spread when isobaric solution is employed.

after the injection was completed, the anesthetic drug spread as shown in figure 2. The drug divides itself into two parts, one going cephalad, the other caudad. The former part diffuses 30 to 35 cm. from the point of injection through the thoracic segments even when patient is horizontal on a level table. The extent of the spread of solution, when injection is made in the lateral position, depends upon the inclination of the lumbar area at the time of injection.

When spinal anesthesia is desired at the thoracic level (fig. 3) or at the sacral segments (fig. 4) the spread of solution can be influenced by position changes.

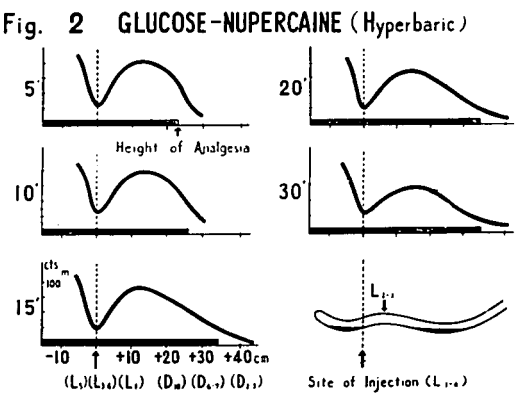

FIG. 2. The spread when hyperbaric solution is employed.

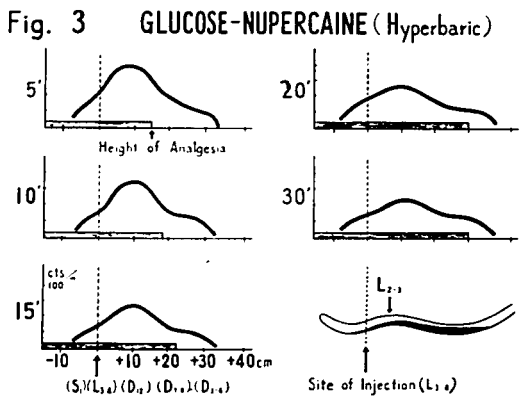

FIG. 3. Anesthesia for upper abdominal surgery.

This permits a reduction by approximately one-half of the amount of the drug ordinarily used and decreases the incidence of untoward side effects such as hypotension, nausea, and vomiting.

In the instances when ineffective anesthesia was recorded it was found to be due to failure of the technique and not in any case due to the constitution of the patient or the nature of the drug used.

SUMMARY

Using radioactive iodine with spinal anesthetic solutions a clinical method is avail-

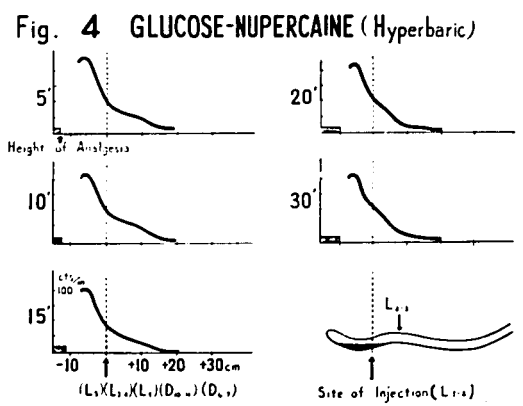

FIG. 4. Anesthesia for lumbar and sacral anesthesia.

able to determine the distribution of the anesthetic drug in the subarachnoid space. When isobaric solutions are used the site of injection must be selected according to the region of operation since the solution will spread very little. A hyperbaric solution disperses easily to any desired extent if the physiologic curvature of the spinal column is utilized.

TETSUO KITAHARA, M.D.,
SHINNOSUKE KURI, M.D., AND
JUN YOSHIDA, M.D.,
Tokyo Teishin Hospital,
Tokyo, Japan

TRICHLOROETHYLENE FOR THE REDUCTION OF PAIN ASSOCIATED WITH MALIGNANT DISEASE

The management of patients with pain incident to malignant disease presents difficult problems. The necessity for prolonged use of narcotics and the problems associated with tolerance and habituation as well as reaction to these drugs are well known.

The present report consists of the results of the prolonged use of trichloroethylene, self-administered, as a substitute for narcotics in 2 patients with metastatic malignancy. Its use for this purpose was suggested by Nowill, Stephen and Searles (1), and Nowill, Stephen and Margolis (2).

At the request of an attending physician the first patient (C. B.) was seen because of pain associated with multiple myeloma. The patient was taking large quantities daily of Dilaudid®, and in an attempt to reduce the quantities, was instructed in the self-administration of trichloroethylene with a standard inhaler. For the next six months, both in the hospital and at home, the patient used trichloroethylene for pain relief, with almost total withdrawal from supplementary narcotics. The patient kept the inhaler within reach at all times; it was refilled as required by either an attending nurse or a member of the family. The patient used self-administered analgesia, as necessary. It was found that between five and fifteen minutes of inhalation of the trichloroethylene vapor, depending upon the concentration, afforded the patient periods of relief from pain and sleep lasting from three to four hours, and frequently longer. Many times, the self-administered analgesic, when taken late at night, afforded a good night's sleep without other medication. This self-administered medication was used by the patient for over six months until her terminal period of about one week, during which time she was comatose.

The second patient (C. S.) were seen in consultation at the request of the attending physician because of pain associated with the pathological fracture of the right femur due to metastatic carcinoma from the breast. Trichloroethylene analgesia was first employed during manipulation of the femur. The pain relief was satisfactory and the patient, an extremely intelligent and co-operative registered nurse, was requested to use it for self-medication as a possible substitute for narcotics, which were being used in large quantities and were associated with severe nausea and emesis. She used the technique with satisfaction for several days, being afforded almost complete pain relief and the ability to secure adequate rest and sleep.

Satisfactory positioning of the fracture relieved this patient temporarily and analgesia was no longer required. Approximately one month later, the position of the femur changed and pain reappeared. Analgesia with trichloroethylene was again instituted by the patient voluntarily. Three days after reinstituting the analgesia, the patient complained of numbness of the face over the distribution of the third division of the fifth cranial nerve on the right side. Investigation showed that during the interval of the month preceding the onset of the pain, the bottle of trichloroethylene had been exposed to the sunlight on the patient's dresser. It was not possible to analyze the contents of this bottle chemically, but it was hy-