

was compared in dogs under ether and dial-urethane anesthesia after intraduodenal and after intraperitoneal administration of sulfathiazole. Unanesthetized dogs were also studied after intraperitoneal injection. The transfer of sulfathiazole was indicated by the C/B ratios obtained by dividing the cerebrospinal level by the blood level at the third hour after the administration of the drug.

It was found that there was an increased passage of sulfathiazole into the cerebrospinal fluid in ether anesthesia. After intraduodenal injection, the C/B ratios were 29 per cent higher with ether anesthesia than with dial-urethane. After intraperitoneal injection the C/B ratios under ether were 80 per cent higher than in the unanesthetized animals and under dial-urethane 20 per cent higher. It was also noted that there existed higher sulfathiazole blood levels under ether anesthesia.

These findings were discussed from the standpoint of the influences of changes in cerebral circulation. It was felt that variations in the passage of any given substance from the blood into the cerebrospinal fluid are regulated by the total brain blood flow and by the state of the cerebral capillaries. 16 references.

R. J. G.

BECK, M. C., AND BALL, R. C.: *Spinal Anesthesia in Obstetrics*. South. M. J. 41: 467-473 (May) 1948.

The use of spinal anesthesia in obstetrics has been increasing through recent refinements in technic and the use of longer acting agents resulting from the work of Sise, Roman-Vaga and Adriani, Cullen and associates, Potter and Whitacre, Parmley and Adriani, and Tovell et al. The authors briefly discuss the above author's reports.

Stimulated by their reports, Beck and Ball report 966 cases in which

spinal anesthesia was used for delivery. Eight hundred and twenty-three patients received low spinal anesthesia for vaginal delivery, while 143 received spinal for cesarean section.

Originally they used the technic of Parmley and Adriani, but later developed their own method for "saddle block" anesthesia. With the patient in the sitting position, a skin wheal is made with 0.5 cc. of 1 per cent procaine containing 5 per cent ephedrine sulfate. The tap is made in the second, third or fourth lumbar interspace, and at the completion of a uterine contraction a mixture containing 1 cc. of 1:200 nupercaine solution (5 mg.), 1 cc. of 10 per cent dextrose, and 0.5 cc. of 1:1000 epinephrine hydrochloride is injected at the rate of 1 cc. per second. After holding the patient in this position for ninety seconds, they place her in the supine position with her head elevated on a doubled pillow. There results anesthesia of the anus, perineum, and skin of the abdominal wall 2 or 3 inches above the symphysis pubis. Uterine contraction pain is relieved in three to five minutes. The feet and legs feel heavy but can usually be moved slightly. If uterine contractions are still painful after five minutes, the anesthetic agent can be forced up the spinal canal by flexing the legs on the abdomen for the duration of one or two pains. There is a slight elevation of pulse and a fall in blood pressure of 10 to 20 mm. These return to normal within ten to fifteen minutes.

The injection may be repeated if painful contractions occur; however, if termination of labor is near, light gas anesthesia may be administered for delivery. Cervical and perineal anesthetics usually last long enough to permit repair without supplement.

Usually the tap is performed in primigravidas when the patient is well in labor with 5 to 8 cm. cervical dilatation, 50 to 70 per cent effacement, and

fetal head at or below the level of the spines. In multigravidas tap is performed at 4 to 6 cm. dilatation with 40 to 50 per cent effacement.

Seventy-three per cent had complete pain relief. Ninety-two required no supplement for perineal repair, 27 per cent required supplement for delivery and 4.5 per cent were considered unsuccessful. The fetal mortality rate was 1.5 per cent. There were no maternal deaths. All but 18 cases were delivered by forceps. Post spinal headache occurred in 8 per cent and nausea and vomiting in 20 per cent.

Complications to the method were then discussed. If analgesia is above the tenth or eleventh dorsal segments, labor is prolonged. If the occiput is posterior, it seldom rotates anteriorly.

For cesarean section 7 to 10 mg. of pontocaine with 10 per cent dextrose were used in most cases. A few received 4 to 5 mg. of nupercaine with 1 cc. of 10 per cent dextrose. Total dilution was 3 to 3.5 cc. with spinal fluid. The tap was done in the lateral position. There was an immediate and marked drop in blood pressure, which usually became elevated in five to eight minutes. There was seldom need for supplemental vasopressors.

One hundred and thirty-six cases needed no supplement, while 4.6 per cent did in the form of pentothal or ethylene. There were 5 stillborns and 3 neonatal deaths.

One maternal death occurred on the third postoperative day. Diagnosis of massive pulmonary embolism was made. There were 5 cases of atelectasis. Post-spinal headaches were less frequent than following vaginal delivery.

SUMMARY AND CONCLUSIONS

1. Of 966 cases receiving spinal anesthesia, 73 per cent delivered by the vaginal route had complete pain relief.

2. Ninety-two per cent needed no supplement for perineal repair.

3. It was unsuccessful in 4.5 per cent of vaginal deliveries.

4. Over 96 per cent of cesarean sections needed no supplement.

5. There were no fetal or maternal deaths attributable to anesthesia.

6. Spinal anesthesia for vaginal delivery is best suited to those in whom contractions are hard and frequent, with relatively slow cervical dilatation and effacement. When used, it is of advantage to the baby and no more hazardous for the mother than other types of anesthesia. 12 references.

J. R. H.

CLARK, DAVID G.: *Anesthesia Activities Aboard U. S. S. "Benevolence."* U. S. Nav. M. Bull. 48: 190-197 (Mar.-Apr.) 1948.

A brief resume of the permanent equipment, personnel, and anesthesia problems is presented.

The entire ship is air conditioned which makes operating conditions pleasant and prevents accumulation of anesthetic gases. An anesthesia room is incorporated in the operating room suite.

One nurse anesthetist and 1 medical officer in charge of anesthesia were assigned aboard. Both carried on other routine duties connected with surgery so that the conduct of anesthesia was essentially secondary.

General anesthesia was administered for intra-abdominal surgery above the level of the umbilicus and for other procedures above this level, unless satisfactory local or regional anesthesia could be produced.

Nitrous oxide and oxygen in conjunction with pentothal was used whenever the operative time was to exceed twenty to thirty minutes, or, whenever the operation contemplated led the anesthetist to expect that more than 1.5 Gm. might be used. It was found that the administration of pen-