TABLE XI.—*Relation Between Pulse Rate Alteration and the Interval Between Premedication and Induction*

Alteration in Pulse Rate (Beats/Minute)	Time (h) of Premedication (Hours before Operation)								
	Series A			Series B			Series C		
	0 < h ≤ 2	2 < h ≤ 4	4 < h	0 < h ≤ 2	2 < h ≤ 4	4 < h	0 < h ≤ 2	2 < h ≤ 4	4 < h
+11 or more	6 (54.5%)	7 (41.2%)	1 (50%)	6 (66.7%)	3 (30%)	1 (100%)	3 (15%)	5 (17.8%)	1 (50%)
—10 to +10	5 (45.5%)	10 (58.8%)	1 (50%)	2 (22.2%)	6 (60%)	—	11 (55%)	17 (60.8%)	—
—11 or more	—	—	—	1 (11.1%)	1 (10%)	—	6 (30%)	6 (21.4%)	1 (50%)
Total ..	11 (100%)	17 (100%)	2 (100%)	9 (100%)	10 (100%)	1 (100%)	20 (100%)	28 (100%)	2 (100%)

TABLE XII.—*Time of Premedication*

Time (h) of Premedication (Hours before Operation)	Series A	Series B	Series C
0 < h ≤ 2	11 (36.7%)	9 (45%)	20 (40%)
2 < h ≤ 4	17 (56.6%)	10 (50%)	28 (56%)
4 < h	2 (6.7%)	1 (5%)	2 (4%)
Total ..	30 (100%)	20 (100%)	50 (100%)

III.—(a) Of the patients given levorphan alone, 23% said that they felt drowsy (Table IV). In series B and C (for which atropine and scopolamine respectively were added to the levorphan) the figure rose to 57% of the 70 patients, the difference being statistically significant. (b) From III (a) above it is concluded that levorphan has a slightly hypnotic effect. (c) The investigation (Table IX) gives no indication that the hypnotic effect of levorphan, either alone or in combination with either of the other two drugs, tends to wear off within the first four hours after subcutaneous injection.

IV.—(a) Of the 100 cases studied, 5% showed respiratory depression (Table V). The investigation gives no indication of difference in this respect among the three series of patients given levorphan only, levorphan plus atropine, and levorphan plus scopolamine. In all five cases the respiratory depression was mild. (b) From IV (a) above it is concluded that levorphan tends to depress respiration slightly.

V.—Nausea was observed in 5% of the 100 cases studied, and was severe in one case. Two of the cases were in series A, three in series B, and none in series C; but the differences are not significant.

VI.—(a) All 30 patients given levorphan alone stated that they remembered the journey to the theatre (Table VII), and 26 of them (86.7%) stated that they remembered the injection of thiopentone (Table VIII). Among the whole 100 patients studied, 92% said they remembered the journey and 76% said they remembered the injection. (b) The three series do not differ in either of these two respects; but, bearing in mind that the injection may not even be noticed by the patient, it is concluded that levorphan has shown no evidence of an amnesic effect in this investigation.

VII.—From I to VI above it is concluded that levorphan given with atropine or scopolamine is satisfactory for premedication; but, except for the long duration of action, has no advantages over omnopon or morphine.

Nitrous Oxide and Oxygen Supplementation by Intravenous Drip

Following the previous investigation of levorphan as a supplement to nitrous oxide and oxygen anaesthesia by the intermittent injection technique, it was decided to investigate the use of the drug for the purpose when given as a continuous intravenous drip infusion. It was found that, in order to build up sufficient analgesia, the drip had to be given at a rate liable to result in respiratory depression. The incidence of respiratory complications following operations performed under this anaesthesia was increased significantly.

Summary

Levorphan has been used as premedication in a series of 100 patients and as a supplement by continuous drip to nitrous oxide and oxygen anaesthesia in 25 patients.

For premedication the drug was found satisfactory, although it did not cause amnesia. It is suggested that as a continuous drip levorphan is contra-indicated because of the high incidence of respiratory depression.

My thanks are due to Dr. Maurice Mitman for advice on the preparation of this paper and to Major E. G. Reeve for a statistical analysis of the results. "Dromoran" (levorphan) was kindly supplied by Roche Products Ltd.

REFERENCES

- Brown, A. K. (1952). *British Medical Journal*, 2, 1331.
 Stoelting, V. K., Theye, R. A., and Graf, J. P. (1951). *Anesthesiology*, 12, 225

Medical Memoranda

Perforation of Both Tympanic Membranes During Anaesthesia

This case is reported because it would appear to be most unusual. I could not find any record of a similar occurrence in the literature.

CASE REPORT

A healthy man aged 30 was operated upon for chronic appendicitis on August 22, 1953. Laparotomy was performed under general anaesthesia. Induction was begun with thiopentone sodium, 0.4 g., followed by succinylcholine chloride, 50 mg. A size 9 rubber Magill endotracheal tube was passed orally under direct vision without any difficulty. A Waters metal airway, size 3, was inserted alongside the endotracheal tube. A rubber face-piece was applied over a piece of gamgee and anaesthesia maintained with gas, oxygen, and trichlorethylene, using a Boyle machine on a semi-open circuit. A few minutes later gallamine triethiodide, 80 mg., was administered, followed by a further 40 mg. about 10 minutes later. Assisted respiration was required for about 10 minutes, and was performed by compressing the rubber rebreathing bag and partly closing the expiratory valve. No undue force was used in this manoeuvre, and free air entry into the respiratory passage was seen and heard.

The operation, which lasted about 40 minutes, progressed without any complications. When it was completed the patient was bleeding from both ears, and the opinion of an E.N.T. surgeon was sought.

The patient was examined 10 minutes after the operation had been completed. He was then waking up from the anaesthesia. On examination, bleeding was seen from both ears. Haematotympanum was found on examination of the left ear, and the tympanic membrane was seen to be very thin and atrophic, and to be perforated in the attic region. On examination of the right ear blood was escaping from the external auditory meatus, haematotympanum was present, the tympanic membrane was very thin and atrophic, and a large triangular posterior perforation was present. On close examination of this triangular perforation a flap of the membrane was found; the pressure of the escaping fluid

from within the tympanum had displaced the flap, leaving a small aperture on one side, and through this aperture blood was escaping.

Systemic treatment with penicillin, 500,000 units eight-hourly, was given to protect the ears from possible infection.

The following day the patient's history was taken. This revealed that he had suffered discharge from the ears from time to time up to the age of 7, when he had had his tonsils and adenoids removed. He had had no trouble in his ears since then, and his hearing was very good. An audiogram a fortnight later (September 10) revealed some decrease in the hearing of both ears.

He made a satisfactory recovery. Both tympanic membranes healed completely; and the patient's opinion is that he can hear as well as before the operation. An audiogram taken four months later was the same as before.

COMMENT

It would appear that in this form of semi-open circuit there is a danger of compressing the air within the mouth and pharynx so that, with widely patent Eustachian tubes and thin atrophic drum membranes, the increased pressure within the tympanum may rupture the drum membrane. This is what seems to have occurred in this case.

I wish to thank Mr. G. E. Archer for his encouragement and advice.

J. K. R. WHITTINGHAM, M.D.,
E.N.T. Registrar, Stockport Infirmary.

Ileo-colic Intussusception in an Adult

This is the case report of a submucous lipoma of ileum which presented as an intussusception. This rare small-bowel tumour was associated with multiple subcutaneous lipomata, of which there was a familial history.

Raiford (1932) found only 88 instances of tumours of the small intestine in 11,500 necropsies and 45,000 surgical specimens examined at Johns Hopkins Hospital. Adenoma and leiomyoma are the commonest small-bowel tumours; fibroma, lipoma, angioma, and neurofibroma are much more rare (Comfort, 1931; Moore, 1944). Comfort discussed alimentary tract lipomata and described 65 submucous lipomata of small intestine, 34 of which produced clinical effects, which in 28 instances were due to intussusception.

CASE REPORT

A man aged 56 was admitted into hospital on January 5, 1953, for investigation of mild central abdominal colic which had occurred an hour or two after meals for the previous three to four months. Physical examination on admission was negative apart from eight subcutaneous lipomata distributed over the flexor surfaces of both forearms and the extensor surface of the right thigh. The patient volunteered the information that his father had had a similar condition on the forearms. There were no features to suggest von Recklinghausen's disease. Twelve hours after admission he suddenly developed symptoms of acute intestinal obstruction with abdominal distension and tenderness and guarding in the right iliac fossa. The pulse rate rose steadily over four hours, and the radiograph of the abdomen taken with the patient in the vertical position showed a gas pattern and fluid levels suggestive of a distal small-bowel obstruction.

On laparotomy the cause of the obstruction was found to be an ileo-colic intussusception 12 in. (30 cm.) long, at the apex of which a polypoid growth could be felt through the caecal wall. The intussusception was reduced and the growth in the lower ileum examined; because of its size and the surrounding oedema the lumen appeared to be still occluded, so the loop bearing the tumour was resected and a side-to-side entero-enterostomy performed. The rest of the small bowel was inspected, but no other tumour found.

The patient was discharged from hospital two weeks after operation; when he was seen later as an out-patient his condition was entirely satisfactory. One of his subcutaneous tumours was excised and found to be histologically a simple lipoma. In the pathological report the resected ileum was described as containing a polyp 2 cm. in diameter which on microscopical examination was shown to be a simple submucous lipoma with an intense inflammatory change in the overlying mucosa (see Fig.).

Specimen of ileum, showing the submucous lipoma and the congested bowel proximal to it.

COMMENT

Most intussusceptions of the small bowel in adults are due to benign tumours; malignant growths are usually annular, and it is not mechanically possible for these to intussuscept. Because benign tumours of the small intestine are commonly polypoid in shape, an intussusception usually develops before the tumour has grown to a size sufficient to obstruct the passage of the fluid small-bowel contents.

This patient presented two clinical pictures often associated with small-bowel tumours. When he was admitted to hospital his symptoms were those of intermittent incomplete obstruction, as evidenced by colic after meals, due, it is thought, to temporary bolus obstruction. Subsequently he developed the acute ileo-colic intussusception which necessitated an emergency laparotomy. At laparotomy the tumour was resected after reduction of the intussusception because it appeared that the bowel would otherwise remain obstructed. Aird (1949) has advised against this, and suggested resecting the tumour at a second operation to avoid the use of partially devitalized bowel in the entero-enterostomy.

The occurrence of multiple lipomata among various members of a family has been previously described, and Willis (1948) believes there is a "heredo-familial predisposition." Although reported cases to support this view are scanty, Willis cites several instances reported by Adair *et al.* (1952), in particular the case of a 53-year-old woman with 16 discrete lipomata whose two sons and a grandson were similarly affected. In Comfort's large collected series of submucous alimentary lipomata no patient is described as having lipomata elsewhere. The association in the case presented may be a coincidence, but it would not be unreasonable to expect it to occur.

The patient was admitted under the care of Mr. A. J. C. Latchmore, and I would like to acknowledge his help and that of Dr. W. Goldie in the preparation of this paper.

KENNETH F. WOOD, F.R.C.S.,
Surgical Registrar, St. James's Hospital, Leeds, 9.

REFERENCES

- Adair, F. E., Pack, G. T., and Farrior, J. H. (1932). *Amer. J. Cancer*, 16, 1104.
- Aird, I. (1949). *Companion in Surgical Studies*, 1st ed., p. 701. Edinburgh.
- Comfort, M. W. (1931). *Surg. Gynec. Obstet.*, 52, 101.
- Moore, R. A. (1944). *Textbook of Pathology*, 1st ed., p. 842. Philadelphia and London.
- Raiford, T. S. (1932). *Arch. Surg., Chicago*, 25, 122.
- Willis, R. A. (1948). *Pathology of Tumours*, 1st ed., p. 660. London.