Of the thirteen cases with premedication, seven (54 per cent.) had one or more unsatisfactory incidents or "complications." Of the nine with no premedication, three (33 per cent.) had complications.

TABLE II.—Complications

Complication	Premedication	No premedication	Total
Sneezing	1	1	2
Coughing	3	1	4
Muscular spasm	1	—	1
Resistance	2	1	3
Post-anaesthetic sickness	1	1	2
Cardiac symptoms	1	1	2
Total	9 (7 cases)	5 (3 cases)	

For details of technique and for general results the reader is referred to the report of 1,000 cases by Abel and Jarman.⁸ There, too, he will find a warning against using ether or chloroform with evipan, the opinion that it is better not to use another barbiturate (which, of course, includes allonal) as a preparation for evipan, and a strong warning against using evipan single-handed. This report accords with their opinion. In their experience no patient who has had evipan alone has vomited, but against that we record one case where this incident did occur.

Conclusion

The chief concern of this article is with evipan in ophthalmic surgery, in which it has been shown to have some special disadvantages as well as advantages. In this particular branch of surgery the number and proportion of cases requiring a general anaesthetic are small. Carefully administered retrobulbar anaesthesia diminishes the number still more. In the small remainder, and subject to the same restrictions as in general surgery, evipan is entitled to consideration.

It is concluded that sodium evipan has a limited use in ophthalmic surgery, which use would be greater if its action were more certain.

I wish to thank Mr. G. F. Haycraft and Mr. H. Campbell Orr for permission to use evipan on their patients, and for their interest and co-operation.

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J. H. Rabinovici (*Thèse de Paris*, 1935, No. 45), who records an illustrative case in a man aged 50, states that staphylococcal septicaemia may assume any form, from a fulminating attack which proves fatal in twenty-four hours, to a protracted illness which may last with remissions for years. The form with an acute onset is not necessarily fatal, but may take on a protracted course. Secondary localization in the bones or joints may occur at a later stage, and be from the first very extensive, with a tendency to necrosis without suppuration and to last for a considerable time. Treatment usually consists, according to the type of arthritis, in puncture, arthrotomy, or resection, but sometimes lesions of the joints and bones may be cured by immobilization alone.

EVIPAN IN OPHTHALMIC SURGERY

FURTHER EXPERIENCES

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Since writing our article on the advantages of evipan in ophthalmic surgery (*British Medical Journal*, September 29th, 1934, p. 589), we have gained further experience in the use of this form of anaesthesia, and would like to emphasize the following points.

Over 200 operations have been performed under evipan anaesthesia at this hospital during the past twelve months, and our previous experience that evipan was an ideal anaesthetic for ophthalmic operations is definitely confirmed. We have not experienced any ophthalmic operation requiring general anaesthesia where evipan has not been far superior to any other general anaesthetic from all points of view, except perhaps for small casualty operations, where ethyl chloride or "gas" may be more convenient.

Happily, in our whole series of cases, we have not experienced the slightest anxiety at any time during the period of narcosis or subsequently. Independent observers have reported similar results. Dr. H. Klitzsch, assistant surgeon to the Eye Clinic of the University of Halle, speaks very highly of evipan as an anaesthetic for ophthalmic operations in a paper based on his experience in over 100 cases.¹ Mr. Cashell, ophthalmic surgeon of Reading, reports that evipan is used as a routine anaesthetic in his work at the Royal Berkshire Hospital.

Practical Points

Several points of practical importance are worthy of mention.

1. *Premedication*.—We have recently introduced pre-operative medication with omnopon and scopolamine injections in selected cases. This has proved very satisfactory. The amount of evipan required as compared with the amount where no premedication is given is materially reduced, and reflex movements of the patient, which sometimes occur with evipan alone, are diminished. This is of particular value in operations for squint in children, where, in an excitable child, with evipan alone, reflex twisting movements are sometimes troublesome, even with large dosage of the drug. With a preliminary injection of omnopon and scopolamine, this feature is usually abolished, the patient lying immobile, even with a materially reduced dosage. The "sneezing" reflex appears to be less liable to occur. Owing occasionally to mild post-anaesthetic vomiting where omnopon and scopolamine has been given in adults, it is perhaps advisable to omit this premedication where a cataract extraction under evipan is contemplated. As regards dosage, we have found that 1/3 grain of omnopon with 1/300 grain of scopolamine for patients over 12 years, and half that amount for children from 6 to 10 years, is satisfactory, given half to one hour before operation.

2. *Cataract Extractions*.—One cataract extraction was performed under evipan on an uncontrollable male patient in whom local anaesthesia, as indicated by a previous preliminary iridectomy, appeared inadvisable. No difficulties were encountered, and the patient was discharged with a satisfactory eye. Mr. Cashell of Reading reports that he has performed a successful cataract extraction under evipan at the Royal Berkshire Hospital.

¹ *Klinische Monats. f. Augenheilkunde*, May, 1934.

3. *Sneezing Reflex*.—This unusual phenomenon consists of a series of violent sneezes which sometimes occur in cases anaesthetized with evipan on manipulations of the conjunctiva. It appears to be initiated by painful stimulation of the fifth nerve endings in the conjunctiva, and is liable to cause trouble should a keratome or a Graefe knife be in the eyeball at the moment of sneezing. A thorough cocaineization of the conjunctiva before operation generally abolishes this reflex in all cases except where the conjunctiva is intensely inflamed, as in acute glaucoma. It is always liable to occur in these latter cases, but appears less so with premedication.

4. *Effect on Raised Intraocular Tension*.—In our previous paper we noted that a fall under the influence of evipan of intraocular tension where this was raised, as in glaucoma, was an added advantage in this condition for operative purposes. We have carefully studied this reaction with every available case, taking tonometric readings of the intraocular tension immediately before and again a few minutes after the injection. In several cases we have noted a really dramatic fall of tension—as much as 40 mm. Hg within two minutes of the injection. In other cases there was a less marked but definite fall of the raised tension, and in very few cases was no improvement noted. We have tried it with more or less marked success as a therapeutic measure in the wards in several instances of acute glaucoma. In these cases after an injection of evipan the intraocular tension was generally lowered sufficiently to allow the eye to respond to eserine and heat, so that operation could be postponed to a more propitious moment. Although up to the present the number of cases of this type which have passed through our hands has been insufficient, and the results not constant enough, to warrant any dogmatic statements, we consider that not only has evipan special advantages as an anaesthetic in operations for acute glaucoma, but also that it has distinct possibilities as a therapeutic measure in the more conservative treatment of this condition.

Clinical Memoranda

Ether Convulsions with Normal Behaviour during Subsequent Ether Anaesthesia

The following case is considered worthy of record because it helps to disprove the suggestion that there is an "ether convulsion diathesis," or, as has been suggested by Kemp,¹ that "if an individual develops tetany during operation under ether anaesthesia the same individual will again develop tetany if he is re-operated on at a later date."

CASE RECORD

A girl, aged 3 years 8 months, was admitted to hospital on account of deformity and infection in the right foot and ankle region following an injury one month previously. The child had been treated at home, but five days before admission the foot had become worse and she was eventually sent to hospital. In the wards for two days conservative measures (dressings and splintage) were tried, but on the third day it was decided to put the leg in plaster as the child took her splints off.

Accordingly the child was anaesthetized with open ethyl chloride changing to ether. Induction was rather rapid and "pushed," and about five minutes from the commencement, when the child was deeply under, twitching of the eyelids and mouth was observed. The colour at that time was good and the respirations normal and quiet. The mask was immediately removed, but the twitching became more severe and widespread, involving the neck, arms, legs, and thorax. The child at this stage became cyanosed. Oxygen with 5 per cent. carbon dioxide was administered, and after another two

minutes the convulsions passed off, leaving the child unconscious, and allowing sufficient relaxation for the plaster to be applied. Recovery from the anaesthetic was uneventful.

Forty-eight hours later the child was worse, and exploration of the os calcis was decided upon. The child was anaesthetized again, pure ether on an open mask being used throughout. The operation lasted at least half an hour, but there were no untoward anaesthetic complications. Subsequent progress was uneventful. On both occasions the child received a preliminary injection of 1/100 grain atropine.

The ether used at the first operation was analysed by Mr. Butchers, senior pharmacist to the Manchester Royal Infirmary, who reported that no impurities (aldehydes or peroxides) were found.

COMMENTARY

It is interesting to note that toxæmia was present throughout and was far more severe at the second operation. This may be contrasted with the late S. R. Wilson's case,² where an anaesthetic was given to reduce a compound fracture and no convulsions occurred; three days later amputation was performed for gas gangrene and the patient developed ether convulsions. It was suggested in this case that the added factor of toxæmia at the second administration may have precipitated the convulsions. In the case recorded the chief difference between the two administrations (if we except their duration) was that in the first instance the induction was pushed and the child was undoubtedly very deeply anaesthetized. Oxygen was not administered previous to the onset of the convulsions. This may be contrasted with the recent letter of Riddell, who is inclined to blame the admixture of oxygen with ether.³

The only other reported instance that I can find of a case of a subsequent administration of ether with safety to a patient who previously had had ether convulsions is that of Niel McDonald.⁴

My thanks are due to Mr. Butchers for his kindness in analysing the ether used at the first operation, and to Mr. Poole Wilson, assistant surgeon to the hospital, for permission to publish his case.

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Surgical Emphysema Complicating Diphtheria with Pregnancy

It may be of interest to record the following somewhat unusual case.

A young woman, aged 19 years, was admitted into St. Mary's Hospital on December 19th, 1934, suffering from epilepsy. She was pregnant. On January 16th, 1935, she developed a sore throat, and a swab was taken. During the night of the 16th she commenced labour, and was transferred to the maternity block. On the morning of the 17th, when the os was fully dilated, she began to swell on the left side of the neck and face, with marked swelling of the eyelids. This gradually spread over the back of the neck and chest, extending downwards to below the breasts. On the back this swelling extended down to the twelfth dorsal vertebra. On pressure it was found to be definitely emphysematous. On the 17th the throat swab was reported positive to diphtheria. Owing to the critical state of the patient and the marked delay in delivery, it was necessary to apply forceps under a general anaesthetic. The emphysematous condition gradually cleared up in the course of a few days, and the patient has made an uninterrupted recovery. The diphtheria was very mild and uncomplicated. This is a very uncommon case, as, no doubt, the emphysematous condition was caused through the patient straining during labour. There was no tuberculous history.

I have to thank Dr. W. G. Willoughby for seeing the case for me.

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² Wilson, S. R.: *Lancet*, May 28th, 1927, p. 1117.

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⁴ *Proc. Roy. Soc. Med.*, Anaesthetic Section, May 4th, 1928.

¹ Kemp, W. N.: Tetany during Ether Anaesthesia, *Brit. Journ. Anaesth.*, July, 1932 p. 169.