CHLORPROMAZINE IN OCULAR SURGERY*

BY

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IN INDIA cataract surgery is a major problem. We consider any person above 60 years of age as a potential cataract patient if he is not one already. Through lack of education, the cooperation of the patient in intra-ocular surgery is not all one would like it to be, and it is therefore best not to rely on the patient's cooperation but to administer suitable sedatives.

Chlorpromazine promises to be a highly suitable drug for this purpose. Delay and Deniker (1955) described its central depressant properties, and Decourt (1953) pointed out its hypnotic and anti-emetic effects, suggesting that analgesics and local anaesthetics have a more lasting effect when chlorpromazine has been used for general sedation. Moore (1955) considered it to be a satisfactory premedication for ocular surgery and stated that it eliminated the risk of non-cooperation on the part of the patient; he used barbiturate premedication together with chlorpromazine 3 days before operation. Burn, Hopkin, Edward, and Jones (1955), who tried chlorpromazine in combination with promezathine and pethidine, stated that this ensured muscular relaxation and freedom from apprehension, with minimal bleeding during operation. Rycroft and Romanes (1955) were of a similar opinion. Pierse and Ives (1955), however, thought that chlorpromazine had a local emetic action which was distinct from its central anti-emetic effect, and therefore advised that it should not be administered orally; they found the effects of the drug to be unpredictable and suggested that it should only be used by an expert anaesthetist.

Material and Methods

105 cases of intra-ocular operation which were admitted to the wards of the S.N. Hospital, Agra, form the subject of this study. Ten were patients in whom iridencleisis was performed, and the other 95 were cases of intra-capsular cataract extraction. No selection of cases was made.

Nembutal 0.75 gr. was given to each patient one hour before the operation, followed by 50 mg. chlorpromazine (Largactil) intramuscularly 30 minutes before the operation.

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The operation was performed under 2 per cent. anethaine local surface anaesthesia. A facial block and a retrobulbar injection of 2 per cent. Novocain were given in each case. The belly of the superior rectus muscle was not injected.

The patients were all between 40 and 65 years of age (average 55). Sixty were males and 45 were females. The blood pressure before the administration of chlorpromazine and before the operation is shown in Table I.

TABLE I
FALL IN BLOOD PRESSURE IN CASES GIVEN CHLORPROMAZINE

No. of Cases	Blood Pressure (mm. Hg)							
	Systolic				Diastolic			
	No. showing Fall of 5 mm. or More	Maximum	Average	Minimum	No. showing Fall of 5 mm. or More	Maximum	Average	Minimum
105	90	46	12.73	5	57	30	11.04	5

The intra-ocular pressure before the administration of the drug and before the retrobulbar injection is shown in Table II.

TABLE II
VARIATIONS IN INTRA-OCULAR PRESSURE

No. of Cases	No. showing No Change in Pressure	Intra-Ocular Pressure (mm. Hg)							
		Fall				Rise			
		No.	Minimum	Average	Maximum	No.	Minimum	Average	Maximum
105	25	74	2	7.3	48	6	5	11.7	20

The mental state and general behaviour of the patient at the time of operation is shown in Table III.

TABLE III
GENERAL CO-OPERATION OF THE PATIENT (PER CENT.)

Author	Date	Excellent	Good	Uncooperative	Total
Moore	1955	60	40	0	100
This Series... ..	1957	56	44	0	100

Congestion of the eyeball, haemorrhage during the operation, vitreous prolapse, and reactions to painful stimuli are shown in Table IV (opposite).

TABLE IV
COMPLICATIONS DURING OR AFTER OPERATION

Type of Medication	No. of Cases	Complication			
		Vitreous Prolapse	Iris Prolapse	Hyphaema	None
No Drug	100	10	4	20	66
Chlorpromazine ...	95	5	4	60	26
Curare	100	0	Not noted	Not noted	—

Results

In general, the patients were relaxed and free from mental tension or apprehension, though the muscular relaxation was less satisfactory than that obtained by curare or curare-like products. The patients could respond to questions, and they reacted to painful stimuli, as was evident at the time of giving the facial block and retrobulbar injections. Pain was specially evident at the insertion of the superior rectus stitch, but the reaction lasted only as long as the stimulus was maintained. The patients protested by wincing and by irregular movements of the eyeball.

The patients complained of a shivering sensation due to the coldness of the skin, but there was no obvious pallor of the face and lips. The eyes looked rather congested, and a greater degree of haemorrhage occurred during the operation than when Nembutal sedation was used alone.

The patients usually complained of dryness of the mouth about 20 minutes after the administration of the drug, and in 30 minutes or so the voice became husky. Several patients had to be given sips of water before the operation. There was no post-operative vomiting or retention of urine.

Discussion

Barbiturate sedation of patients for intra-ocular surgery has been the usual procedure in this unit. This form of sedation may give a false sense of security to the operator, as the patient often looks drowsy and sleepy, though there is no muscular relaxation and the patient's anxiety and tension are not allayed. This sedation does not reduce the patient's reaction to painful stimuli which lasts not only while the stimulus is applied but far beyond it. The combination of barbiturates with chlorpromazine, as used by Moore (1955), has helped to produce a calmer, more cooperative, and more relaxed patient. Burn and others (1955) found this to be the case when they administered chlorpromazine in combination with promethazine and pethidine.

In the present series it has been observed that this drug does not provide such complete muscular relaxation as curare or curare-like products, but

that mental apprehension, tenseness, and anxiety are almost completely eliminated. The patient is generally calmer and more cooperative, and can obey commands given to him. Much stress is usually laid on the need for the patient's cooperation during the operation, but we do not rely on this. Our aim in cataract surgery is to render the cooperation of the patient unnecessary and to regulate his behaviour so as to preclude the blame of a bad result being laid on his shoulders. Curare and curare-like products provide complete muscular relaxation, but chlorpromazine provides in addition complete mental relaxation and produces a carefree attitude in the patients. A combination of curare with chlorpromazine seems to be a rational procedure.

Decourt (1953) believed that chlorpromazine enhanced the effect of local anaesthetics, but we have not found this to be so. On the contrary, we feel that larger quantities of local anaesthetics are required to produce the same effects, and we have noted that the reaction to painful stimuli was often more marked than is usually seen under simple barbiturate sedation (1.5 gr.). In cataract and glaucoma operations, Burn and others (1955) found that the conditions produced were excellent, but in their six cases of acute glaucoma involuntary movements of the eyeball limited the usefulness of this drug. In our five similar cases we did not find reaction to painful stimuli to be of any consequence. All these cases could be successfully operated upon under local anaesthesia.

The hypotensive effects of the drug, at least by the intramuscular route and in the doses employed by us, do not seem to be of any magnitude in persons not already hypertensive. About 14 per cent. of our cases showed no fall in systolic pressure, and in the rest there was an average fall of only 12 mm. Hg. The response of the diastolic pressure was more equivocal and 45.7 per cent. of cases showed no fall in diastolic pressure, the average fall being 11.7 mm. Hg. If hypertensive cases are excluded, the fall is less significant. There was no tachycardia or severe hypotension to cause any anxiety, and the fears expressed by other authors about these two complications are not shared by us. We do not think that the effects of the drug call for any particular caution or for the services of an expert anaesthetist. The intramuscular injection of the drug is quite adequate and safe.

Paul and Leopold (1956), in an experimental study on cats and rabbits, found a positive fall in intra-ocular pressure. Burn and others (1955) noted the same in the case of human beings. Our own results are equivocal and do not show a uniform tendency towards a fall in intra-ocular pressure; some cases even showed a rise (5.7 per cent.), while in a considerable number no effect was seen (23.8 per cent.), and in about the same number the fall was insignificant (2 to 3 mm. Hg Schiötz). The fall in intra-ocular pressure in no way helps the operator, but a rise in intra-ocular pressure is embarrassing in cataract extractions (in two cases there was a rise of about 20 mm. Hg Schiötz).

In our cases, the eyes looked more congested and the preparation of conjunctival flaps resulted in an embarrassing degree of haemorrhage. This observation is contrary to that of Burn and others, who could complete a bloodless operation and considered this to be a definite advantage of chlorpromazine. They attributed the effects to a general fall in blood pressure. Our own observations reveal that the fall in blood pressure is not uniform and not very significant. The congestion of the eyeball is perhaps due to the adrenolytic effect of the drug which produces some degree of peripheral vasodilatation. These differences may be due to our not having used promethazine, an anti-histaminic compound which has perhaps a decongestive effect.

The drug does help to reduce the percentage of cases of vitreous prolapse, but post-operative iris prolapse is no more common with this sedation than without it.

The continued administration of the drug in the form of tablets in the post-operative period is a considerable help in the proper care of the patient. The complications which may arise in the first 2 post-operative days are largely due to non-cooperation by the patient, and these risks are eliminated by continued sedation.

The drug had no untoward effects in the dosage used, except for slight dryness of the mouth and huskiness of the voice. In a few cases the passage of urine was delayed but this, too, was of little clinical significance. Post-operative vomiting, nausea, or retching was absent, probably because the sedation was continued for 2 days post-operatively. Recovery from the effects of the drug was slow, gradual, and uneventful.

Summary

- (1) In intra-ocular operations (95 for cataract and ten for iridencleisis), 0.75 gr. Nembutal and 50 mg. chlorpromazine (Largactil) were given 30 minutes before the operation.
- (2) The sedative and hypotensive effects of the latter are described.
- (3) Other effects of chlorpromazine are noted.
- (4) Its use as a sedative in ocular surgery is discussed.
- (5) Its use as a sedative in ocular surgery with curare is recommended.
- (6) It is suggested that it should be combined with a drug such as promethazine to counteract its adrenolytic activity.

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