Summary

A case of subcutaneous rupture of the pancreas due to an apparently minor injury is described. The treatment adopted was an exploratory operation followed by limitation of the secretion of pancreatic juice. The use of serial serum amylase estimations is recommended, both as a diagnostic test and as an index of the progress of the lesion.

REFERENCES

- Aldis, A. S. (1946). *Brit. J. Surg.*, 33, 323.
 Bockus, H. L. (1946). *Gastroenterology*, 3, 784. Saunders, Philadelphia.
 Keynes, G. (1944). *Brit. J. Surg.*, 32, 300.
 Naffziger, H. C., and McCorkle, H. J. (1943). *Ann. Surg.*, 118, 594.
 Phillips, S. K., and Seybold, W. D. (1948). *Proc. Mayo Clin.*, 23, 254.
 Stern, E. L. (1930). *Amer. J. Surg.*, 8, 58.
 Travers, B. (1827). *Lancet*, 12, 384.

CHLORPROMAZINE HYDROCHLORIDE IN INTRAOCULAR SURGERY

BY

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Anaesthesia for intraocular surgery presents many special problems, and until recently it has not received serious attention from anaesthetists. Ophthalmologists have evolved a very efficient local analgesic technique, and operative results have on the whole been good, but there has always been the risk of an uncooperative patient. Furthermore, patients requiring intraocular surgery are frequently elderly, and the clinical picture is complicated by a varying degree of arteriosclerotic cerebral degeneration, so that complete co-operation cannot be assured. In addition, any operation on the eye must be an unpleasant experience for a conscious patient, who may flinch or "squeeze" the eye in such a manner as to jeopardize the ultimate result—a possibility which must be a constant source of anxiety to the surgeon.

Good visual acuity will often make a great difference to the mental and physical well-being of these difficult patients, so that any improvement in technique is important if it simplifies the surgeon's task and gives a better chance of success. Many patients requiring surgical intervention on the eye are suffering from general medical diseases—hypertension, cardiovascular disease, diabetes, chronic bronchitis—to say nothing of senility; and in this unit the pre- and post-operative supervision of the patient by the anaesthetist has proved of the utmost value.

Anaesthetic Requirements for Intraocular Surgery

The main anaesthetic requirements of a patient undergoing intraocular surgery are: (1) The anaesthetic technique must in no way raise the intraocular tension at any stage, and in fact should lower it so far as possible. (2) No sudden increase in arterial or venous blood pressure must be permitted, and when possible some degree of hypotension is desirable to lower the intraocular tension still further. (3) A tranquil recovery period free from restlessness, vomiting, coughing, and "squeezing" of the eye is essential; in

fact a prolonged period of quiescence for at least 24 hours after the operation is an advantage and reduces the risk of ocular complications.

During the last few years we have endeavoured to improve the technique of anaesthesia for intraocular surgery. In the first place, a method was used whereby the patient was premedicated to such a degree as to produce almost light-plane general anaesthesia, and this was combined with local infiltration analgesia and general akinesia, using D-tubocurarine in sufficient doses to cause relaxation of the levator palpebrae muscle and paresis of the extraocular muscles. This method usually produced good results and eliminated the need for co-operation from the patient; it also overcame the hazard of "squeezing" of the eye during the operation and for some time afterwards, and furthermore it lowered the intraocular tension and thus reduced the chances of vitreous loss during extraction. The main difficulty was, however, to judge the patient's response to premedicant drugs. While in some cases the technique left little to be desired, in others the effect on the patient was such as to produce severe depression of the vital centres, particularly of respiration, so that the procedure became rather hazardous. Furthermore, some patients became excitable and unmanageable.

The Suitability of Chlorpromazine

Chlorpromazine hydrochloride ("largactil") has been used in anaesthesia as one constituent of the "lytic cocktail," a mixture of drugs calculated to depress tissue metabolism and inhibit compensatory autonomic reflexes, thereby reducing the amount of the agent required to induce and maintain anaesthesia; or it may be used to allow operation without a general anaesthetic at all, only local analgesia and a muscle relaxant being necessary. It has also been employed in psychiatric medicine for the treatment of conditions characterized by agitation and central psychomotor overactivity. It was on the last count that we thought that this substance might produce favourable circumstances for intraocular surgery and give more consistent results than the previous techniques.

Chlorpromazine hydrochloride has a variety of pharmacological actions; those important in intraocular surgery are: (1) production of sleep and general lowering of metabolic rate; (2) potentiation of the action of other analgesic and anaesthetic drugs; (3) depressant effect on the vomiting centres; (4) pronounced anti-adrenaline effect; and (5) some reduction in muscle tone. It has a prolonged action, during which the patient sleeps peacefully, returning gradually to full consciousness in 12 to 24 hours; further, although sleeping most of the time, the patient can be roused and answer questions rationally after one to three hours. There is a considerable degree of depression of cerebral activity, but, even so, the respiratory rate is not depressed as much as might be expected; actually the amplitude is slightly increased. The central depressive effect on the vomiting centre is particularly advantageous.

Its effect on the blood pressure in normotensive patients is not so marked, but the greater the degree of hypertension the more precipitous is the fall in blood pressure; however, in no case in the present series did a patient appear to suffer any ill effects as a result of this. There is often a preliminary rise in the pulse rate, but this soon settles at slightly above normal. The patient becomes pale, but the peripheral circulation appears good.

Technique

The night before operation patients receive sedation with quinalbarbitone ("seconal"), 1½ or 3 gr. (0.1 or 0.2 g.). One hour pre-operatively quinalbarbitone, 1½ gr. (0.1 g.) by mouth, and pethidine, 100 mg. intramuscularly, are administered; in some frail subjects the quinalbarbitone has been omitted. The patient is brought to the anaesthetic room 15 minutes before the operation is due to start. An intravenous injection of a mixture of 50 mg. chlorpromazine hydrochloride and 100 mg. pethidine diluted to 20 ml. with

sterile water is started. The injection is given slowly at the rate of about 1 ml. per minute until the patient falls asleep and can tolerate a lubricated artificial airway. The dose required varies from 20 to 45 mg. of chlorpromazine and 40 to 90 mg. of pethidine. During induction a few patients complain of thirst or palpitations, but these are of short duration. Patients even at this stage are often just capable of responding to shouted instructions, but in a most apathetic way, and their efforts are poorly maintained. On questioning afterwards they have no recollection of this; on the other hand, there appears to be no retrograde amnesia, and all remember coming to the anaesthetic room.

A regional infiltration with procaine is given, coupled with a retrobulbar injection. A long, narrow-bore tube connected to an oxygen cylinder is placed beneath the face towel so that the open end is in close proximity to the artificial airway in an attempt to keep the air circulating beneath the towels and increase the oxygen concentration.

The patient sleeps peacefully throughout the operation, and the operator can take as long as he wishes without the fear of a restless patient. After the operation patients cause the minimal amount of trouble in the ward, and the method has been well received by the ward sister. After one to two hours patients will often remove their own airways. Unless disturbed, they sleep for the remainder of the 24 hours. If roused they answer questions with progressively more enthusiasm, and quickly drop off to sleep again. Next morning they have all appeared normal, the majority having no recollection of the previous 24 hours.

Results

Since March, 1954, 80 patients have been anaesthetized in this way. Their ages ranged from 18 to over 80 years, the majority being between 60 and 80 years. Three-quarters of this number were undergoing cataract operations, and the remainder operations for glaucoma and corneal grafting. There has been no mortality or morbidity in this series, and the patients' post-operative condition has been excellent. Although the method has not been used on the extremely frail and those with severe cardiac disease, it has been used for nervous patients, and also in many cases with marked signs of arteriosclerotic cerebral degeneration where a purely local technique would have been dangerous.

In one case vomiting occurred four hours after the operation, but it was of very short duration, and in this case there was a history of many years' "gastric trouble." With this exception there has been no coughing or straining in the post-operative period and recovery has been extremely quiet and uneventful. Two cases of severe hypertension, both with a pre-operative systolic blood pressure of over 250 mm. Hg, caused some anxiety in the post-operative period. Soon after injection of the chlorpromazine-pethidine mixture the systolic blood pressure in both cases fell to between 70 and 90 mm. Hg, and it remained at this level for just over three hours post-operatively. Apart from the hypotension, the physical state of these two patients appeared satisfactory and the pulse remained slow and easily palpable. At the end of three hours the blood pressure began to rise slowly in each case, and returned to the pre-operative level in 12 hours. Both patients made an uneventful recovery.

Summary

A method of anaesthesia for use in intraocular surgery has been described, the agent being a mixture of chlorpromazine hydrochloride and pethidine.

The results obtained in 80 cases have been briefly recounted.

The main advantages of the method are: (1) no co-operation is required from the patient during the operation or for several hours afterwards; (2) it produces a low-tension eye ideal for intraocular surgery; and (3) the recovery period is extremely tranquil.

LIVER DAMAGE AND EOSINOPHILIA FOLLOWING CHLORPROMAZINE THERAPY

REPORT OF A CASE

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A relationship between chlorpromazine therapy and liver damage has been recognized. The extent of liver damage varies; at least one fatal case has been reported (Boardman, 1954). Lemire and Mitchell (1954) mention the occurrence of transient eosinophilia during chlorpromazine jaundice. The present case report also illustrates this unusual phenomenon.

Case History

The patient, a man aged 52, was of Jewish extraction. During the last four years, electric convulsion therapy had been given elsewhere on some 30 occasions for a recurring depressive state. Between March 31 and April 12, 1954, chlorpromazine was administered orally, the total dosage being 1.5 g. His previous medical history and family history were not relevant. About ten days after beginning this treatment he became nauseated. During the next three days he became febrile and began to vomit. He complained of pain in all his joints, frontal headaches, rigors, loss of appetite, and colicky abdominal pain; he developed a continuous burning pain in the epigastrium. Chlorpromazine was suspended. Admission was arranged to the Royal North Shore Hospital of Sydney on April 19.

Physical examination revealed a well-developed middle-aged man who was obviously jaundiced. His temperature was 102.2° F. (39° C.). The liver was not palpable, but there was generalized abdominal tenderness, maximal in the right hypochondrium. There were no splenomegaly, no glandular enlargement, and no abnormality on rectal examination. The blood pressure at the time of admission was 75/50. Subsequent readings were in the order of 100/70. The urine was very dark, and analysis revealed the presence of bile pigments, bile salts, and an excess of urobilinogen. The first faecal specimen examined after admission was pale.

On April 19 the leucocytes numbered 15,300 per c.mm., of which 49% were eosinophils. On the 20th the white cells totalled 14,900 per c.mm. (eosinophils 58%); the serum proteins were 7.9 g.%, the albumin-globulin ratio was 2.4:1; the thymol turbidity was 1 unit (normal range 0-4); the serum alkaline phosphatase was 12.8 modified Bodansky units (normal range 2.2-8.6) (Shinowara *et al.*, 1942); and the serum bilirubin was 3.8 mg. per 100 ml. The Casoni test was negative, and no ova, cysts, or parasites were found in the stools. The chest x-ray findings were normal; the plain x-ray film of the abdomen showed no gross abnormality; repeated examinations of the stools for occult blood were negative; and the Eagle flocculation test was negative. Three days after admission the temperature had fallen to normal. A slight subjective improvement had occurred but he remained deeply jaundiced.

By April 30 the diagnosis had not been established, so it was decided to perform liver biopsy by needle aspiration. This was done on May 3. The section showed bile pigment in the bile canaliculi, mainly near the centres of the lobules. There was no accumulation of bile in the bile ducts of the portal tracts. The liver cells appeared healthy throughout. Some of those near the centres of the lobules had bile in their cytoplasm. In the supporting tissue of the