

On admission to hospital he was completely blind in both eyes. His mental condition was clear. There was marked pallor of the skin and mucous membranes. Pulse was 80 a minute, regular, and of fair volume. There was no thickening of the radial vessels. B.P. was 135/80 and Hess's test was negative. Haemoglobin (Sahli) was 25%. There was some tenderness in the right hypochondrium but no rigidity. The liver and spleen were not enlarged. The eye movements were full. Ophthalmoscopic examination showed disks which were hyperaemic and somewhat swollen (2D). The disk margins were ill defined, the arteries markedly constricted, and the veins dilated. There was no nipping of veins. Two streaky haemorrhages were seen in the right fundus near the disk margin at 2 o'clock and 7 o'clock. A similar haemorrhage was noted at 3 o'clock near the disk margin in the left eye. No exudates were observed. The pupils were widely dilated, circular, and fixed. The spinal reflexes were sluggish. The cerebrospinal fluid was under 200 mm. pressure; there was no blood present and no cellular increase.

1½ pints of Group O blood was administered by intravenous drip, and iron was given in full doses. Three days after admission the haemoglobin had risen to 46%. Red cells numbered 2,290,000/c.mm., white cells 3,800/c.mm., platelets 200,000/c.mm. There was anisocytosis and poikilocytosis of the red cells, and the differential white count was within normal limits. The blood urea was 29 mg./100 c.cm. Twelve days after admission the haemoglobin was 70%, 27 days after 85%, and 31 days after 89%. X-ray examination by barium meal 34 days after admission showed a deformity of the duodenal gap.

The patient was discharged after 38 days feeling well, with a good appetite, and without pain. He was still completely blind in both eyes. The pupils were central, circular, equal, and of moderate size, but did not react to light. There was now obvious optic atrophy, the haemorrhages had disappeared, and the arteries were still narrowed.

### Discussion

Various theories have been advanced to account for the blindness. Samelsohn, quoted by Gowers (1904), considered that the nervous connexion between stomach and corpora quadrigemina afforded the best explanation, it having been noted that the disease or injury of the corpora could give rise to haematemesis. Goerlitz (1920) examined an eye pathologically 10 days after the onset of blindness following haematemesis; the main changes found were an intense oedema of the disks and oedema of the retina, these changes resembling those found in intoxication amblyopia such as is caused by methyl alcohol. Whiting (1929) favours the hypothesis that toxæmia renders the ganglion cells more sensitive to blood deprivation and that sudden death of the ganglion cells and their fibres is responsible. Fisher (1929) suggested that exudation of fluid in the nerve sheaths might be responsible. Wolff, quoted by Rugg-Gunn (1937-8), suggested that diminished oxygen supply might lead to spasm of the arterial walls and so be the cause of the blindness.

In the present case one of the most striking features was the marked contraction of the retinal arteries. And whereas a raised blood urea might have been expected the level was unusually low—viz., 29 mg./100 c.cm. Whether this low urea level is of any significance is open to discussion.

### Summary

The literature on blindness following gastro-intestinal haemorrhage is briefly reviewed.

Details of a case showing this rare complication are given.

The present case gave a history of having had small repeated blood losses, possibly from haemorrhoids, before the haematemesis.

There was marked contraction of the retinal arteries.

By a wider appreciation of the existence of this unusual complication of haemorrhage and adoption of routine inspection of the fundi for early changes this catastrophe might be avoided. A blood transfusion, given early, may halt these changes and be a sight-saving measure. Once vision has gone there is little likelihood of response to any form of treatment.

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## Medical Memoranda

### Anaesthesia and Blood Transfusion in 14 Cases of Traumatic Aneurysm

Anaesthesia and blood transfusion for cases of aneurysm present problems to be met with only in peacetime when working in conjunction with a surgeon doing blood-vessel surgery. This military hospital has had 14 cases of aneurysm over a period of 16 weeks. The literature available reveals very little on this subject. The cases, being battle casualties, presented the textbook description of a traumatic false aneurysm, with the exception of the so-called varicose arteriovenous type. When removal of this particular type was attempted it was found to have so many ramifications that blood loss was liable to be tremendous.

All the subjects were brought to the operating theatre in good condition, the average length of time between injury and operation being approximately 4 weeks, giving the opportunity for pre-operative blood transfusions if necessary. No case was operated on until the blood pressure was within normal limits. The premedication used was morphine 1/4 gr. with hyoscine 1/100 gr., while the anaesthetic in 8 of the 14 cases was pentothal 0.5 g., N<sub>2</sub>O, vinesthene, and oxygen, and usually but not always ether in conjunction with a (home-made) CO<sub>2</sub> absorber. The remaining cases were given pentothal 0.3 g. and ether through an Oxford vaporizer with the addition of oxygen. Care was always taken to give a liberal quantity of oxygen, particularly when the transfusion could not keep pace with the blood loss. The sites of the aneurysm were carotid, subclavian, brachial, popliteal, and femoral—this warranting the use of intratracheal intubation in the first four types. The average length of time of all operations was just over three hours.

It was found that planning and preparation for a sudden and tremendous loss of blood were needed in all cases, for it could never be determined beforehand which case more than another was likely to have a severe haemorrhage. Before starting any of the operations the local blood bank was asked to supply 5 pints of fresh blood ready for immediate use. As soon as the anaesthetic had reached the third stage and before beginning the operation a needle was inserted and a slow drip started. If there was only the small blood loss to be expected at any operation the transfusion was allowed to drip at 60 a minute, but the transfusion, in any minor or major loss, was ready for immediate use as a stream, even under positive pressure. In two of the cases the loss was so great that a second transfusion had to be set up in order to maintain blood volume. As more experience was gained it was decided to try autotransfusions, but in the latter cases there was no justification for the attempt. Team-work was absolutely essential—as, for example, in two cases when the supply of blood was exhausted, donors having to be called for and bled.

There were 2 deaths. The first of these occurred in a case of popliteal aneurysm four hours after operation, when the patient had recovered consciousness. The blood loss had not been heavy, and had been replaced with one pint of the same group. Unfortunately there was no necropsy. It was thought that death was due to pulmonary embolism. The second death, in a case of subclavian aneurysm, occurred on the table, after 1½ hours' operating time, from a sudden uncontrollable haemorrhage with which no transfusion could have kept pace. Up to the time of this incident the condition of the patient had been quite satisfactory.

The following successful extreme case indicates the difficulty of the surgeon and the anaesthetist, and shows not only the amount of blood a man can lose, and have replaced, but also the amount he may need if a favourable result is to be obtained.

### ILLUSTRATIVE CASE

On the morning of Aug. 14, 1944, Major F. was operated on for a femoral aneurysm of the arteriovenous type. After 3½ hours' operating the procedure was stopped at the request of the anaesthetist in spite of the fact that the haemorrhage was not under control. The wound was packed. The patient had been given 4½ pints of blood and half a pint of plasma. The same day, 8 hours later, his condition having improved, he was again taken to the theatre, and this time 9½ pints of blood were given with half a pint of plasma. The operation was again stopped at the request of the anaesthetist, after 4½ hours. The wound was still bleeding, and was packed as before. Five days later he was returned to the theatre, and this time the operation was successfully concluded after 4 hours and 40 minutes, the patient having received 8 pints of blood and half a pint of plasma. The plasma was used only to tide over the intervals between the obtaining of whole blood. The total operation time was 12 hours 40 minutes, while the total of transfused material was

2½ pints of blood and 1½ pints of plasma, given over a period of 6 days. One is tempted to ask if this is a record for the amount of blood given over such a short period. The anaesthetic used was pentothal 0.5 g., N<sub>2</sub>O, and oxygen, with an absorber. The patient's condition 10 weeks after operation can be regarded as satisfactory. In the first two operations both Groups A (II) and O (IV) were used in about the proportion of 2 to 1, while in the last operation A only was given.

The patient's blood picture at the present time shows the following: R.B.C., 4,200,000; Hb, 71% (Sahli); W.B.C., 6,800 (polymorphs 59%, lymphocytes 28%, monocytes 12%, eosinophils 1%).

## COMMENT

Anaesthesia for cases of aneurysm presents no unusual difficulties, but a liberal quantity of oxygen is indicated, particularly when the blood loss is heavy. Planning and preparation for a large blood loss in these cases was always necessary. Transfusion was given to all cases in order to be immediately ready for any emergency. In two cases two transfusions were set up at the same time in the one patient. With all precautions a transfusion may not be able to keep pace with blood loss.

I wish to thank Col. J. Bruce, consulting surgeon, for permission to publish this article.

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## Local Penicillin in Purulent Pericarditis

The following case of acute purulent pericarditis was treated by direct infusion of penicillin in Ringer's solution after surgical drainage. Two complications—pleural effusion and infection of an inadequately removed rib cartilage—arose during treatment.

## CASE REPORT

The patient is a full Samoan, aged 29, and a local resident. He was admitted on Dec. 16, 1944, with fever, pains in the head and chest for 5 days, a cough for 7 days, and an abscess on the left leg for 7 days. The abscess had been discharging for 2 days before admission. His previous history was a pleural effusion, for which he had been treated in hospital 7 years ago. The diagnosis was toxæmia, secondary to the abscess of the leg. A bacteraemia was suspected, but no growth occurred after 5 days' incubation.

On the night of admission his temperature rose from 103.8° to 105°, but dropped the following day to 100°, thereafter fluctuating between 102° and 99° until the second day after operation. His white cell count was 12,650. He was given 2 g. of sulphapyridine on admission and 1 g. six-hourly for three days. At this time sulphadiazine was substituted, and he received a course of 33 g. in 9 days. The response was poor, and he was given 6 g. of sulphathiazole in two days without any benefit. Two weeks after admission his white cell count had risen to 18,100 and the blood cultures were still negative.

20th Day.—A pericardial rub was audible and fine rales were heard in the bases of both lungs. Intravenous penicillin was started (225,000 units in 48 hours); the temperature, pulse, and clinical condition remained unchanged.

28th Day.—Red cells, 3,600,000; Hb, 76%; C.I., 1.05. White cells, 9,800 (polymorphs 62%, lymphocytes 24%). The apex beat was now in the midaxillary line and the right border was 2 in. beyond the right sternal border at the 5th intercostal space. The neck veins were prominent, and the patient was in great respiratory distress.

32nd Day.—I was called in consultation. At this time his precordial dullness was continuous on the left from the 2nd interspace in the midclavicular line to the midaxillary line at the 6th space. The right border was at the midclavicular line in the 6th space. Heart sounds were not audible. Breath sounds were absent in the left lower chest, and coarse rales were heard throughout the remaining areas of the chest. The pericardium was aspirated through the 5th intercostal space, 30 c.cm. of blood-stained semipurulent fluid being removed. Vision was almost absent in the left eye and blurred in the right. In preparation for surgical intervention a blood examination was made, with the following results: Group O: red cells, 4,400,000; Hb, 87%; C.I., 0.98; white cells, 5,200 (polymorphs 66%, lymphocytes 18%); Schilling, left shift 3:1; sedimentation rate, 41 mm. in 1st hour; bleeding time, 3 min.; coagulation time, 4 min.; total serum protein, 7% (albumin 4.6%, globulin 2.1%); mean corpuscular haemoglobin concentration, 48%; culture sterile after 7 days' incubation.

35th Day.—I performed a pericardiectomy, using local analgesia, through a linear incision centred over the 5th and 6th rib cartilages. Two inches of the rib cartilages was removed. The intercostal bundles were incised in the line of the incision and sutured to the deep fascia. Two tie sutures were inserted into the pericardium and the incision made between. There was an immediate burst of effusion, projected 12 ft. Using the tie sutures to open and shut the incision, gradual decompression was effected. Two and a half pints of effusion was expressed by heart action. The tie sutures were then united to the skin to ensure patency. 20 c.cm. of penicillin (1,000 units per c.cm. in Ringer's) was instilled into the sac with a Dakin syringe, and a vaselined gauze dressing laid on the wound. The blood pressure at the start of the operation was 94/54: no appreciable change occurred during the operation. 500 c.cm. of whole blood was given during the procedure, followed by 1 litre of 5% glucose-saline at 36 drops a minute. B.P. readings were taken at 15-minute intervals for the next 8 hours, being uncertain of the origin of the blood in the effusion. The maximum reading was

138/80, and the minimum 94/50; after 6 hours it became constant at 108/62. The pulse during this time was a maximum of 134 and a minimum of 100 a minute. The effusion gave a heavy culture of pure *Staph. aureus*, sensitive to penicillin *in vitro* (38 mm. zone of inhibition).

Conspicuous relief of cardiac and respiratory distress was apparent 4 hours after operation. Twice-daily dressings were done, 10 c.cm. of the same concentration of penicillin being instilled each time, for five days.

2nd Post-operative Day.—Sulphadiazine was begun because of our limited supply of penicillin, a course of 24 g. being given in 13 days. From this time onwards the temperature fluctuated between 97 and 98.8° until March 18.

8th Post-operative Day.—B.P., 102/68; pulse, 90; respiration rate, 22. The apex beat was 4½ in. from the midline in the 5th intercostal space, all heart sounds clearly audible but still faint; moist sounds were heard in the pericardium. Blood examination showed: Red cells, 4,800,000; Hb, 90%; C.I., 0.92; sedimentation rate, 21 mm.; white cells, 6,500 (polymorphs 53%, lymphocytes 38%); Schilling, right shift 8:11.

By the 17th post-operative day the sinus had closed spontaneously, but some discomfort was felt. The sinus was opened, releasing about 30 c.cm. of penicillin-stained serous fluid with no active units. On the 19th post-operative day 10 c.cm. of similar fluid was aspirated: a guinea-pig test revealed nothing pathological. By the 21st post-operative day (Feb. 10) the precordial sinus had closed, and the patient progressed satisfactorily until the 45th post-operative day (March 5), when the wound became tender. On the 50th post-operative day (March 10) it broke down, and a semi-purulent discharge began. Four days later 1 pint of fluid, similar to that previously evacuated, was removed. Some pain and embarrassment were felt and aspiration was discontinued. On March 21 (61st post-operative day) gentle curettage was performed. On April 16 the patient was discharged to the out-patient department with a draining sinus. Two weeks later he was readmitted for removal of an infected cartilaginous tip of the 5th rib. By May 22 the wound had healed and the patient was discharged. The heart was then within normal limits and the chest clear and resonant throughout; B.P. 112/78. Eyes: both fundi clear; fields normal; left eye 6/12, right eye 6/18, Snellen.

There is as yet no clinical evidence of any pericardial adhesions, which will perhaps be found later, and I anticipate the follow-up with interest. The normal base-line temperature of Samoans is 97° F.

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## A Very Large Granulosa-cell Tumour of the Ovary

The following case is of interest because of the unusually large size of the tumour.

## CASE HISTORY

The patient, a woman of the Hausa tribe of Northern Nigeria, aged 35, was first seen in Sept., 1944, when she complained of gross enlargement of the abdomen. Two years and ten months previously she began to suffer from continuous uterine bleeding, with the passage of clots of blood. This lasted for ten months, and was followed by complete amenorrhoea for the two years up to the date of examination. The enlargement of the abdomen began two years ago and gradually increased throughout this time. Menstruation was normal before the onset of the condition. The patient was married at about 14 years of age (as is the practice of the Hausa people), and had three live children, the last 16 years old, and a miscarriage ten years ago. Since then she has had no further pregnancy.

On examination the patient was seen to be a thin woman with an abdomen larger than the average full-term pregnancy. The swelling was not uniform, but was more prominent in the hypogastrium and left iliac fossa. Per vaginam the lower pole of the tumour was felt through the posterior fornix. The position of the uterus could not be properly defined.

On Sept. 8, 1944, laparotomy was performed under open ether anaesthesia. The tumour was found to arise from the right ovary, and had a well-defined pedicle. Numerous omental adhesions were divided, the pedicle ligated and divided, and the tumour removed. The uterus was of normal size; the left ovary was atrophied as in a patient after the menopause. The abdomen was closed and the patient was given glucose-saline per rectum. Her recovery was straightforward. The tumour was found to weigh 20 lb. The greater part of it was solid—in some places necrotic. There was a cystic part about 6 in. across. Portions from the solid part of the tumour and from the wall of the cyst were examined microscopically by Dr. G. W. St. C. Ramsay, acting senior pathologist at the Medical Research Institute, Yaba, Nigeria, and he reported as follows.

"The specimen is a granulosa-cell tumour of the ovary. In the cystic part the tumour assumes a papillary form; elsewhere it is composed of solid masses of polyhedral cells with vesicular nuclei divided up by strands of rather hyaline connective tissue. The size of the tumour may possibly be a record. Ewing quotes one case weighing 10½ lb., or just about half the weight of this specimen."

The patient was seen again about three months after the operation and was then in good health.

I am greatly indebted to Dr. Ramsay for his report and for photomicrographs he prepared from the sections of the tumour.

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