Case 5.—A Central Provinces pioneer, aged 18, was transferred from the V.D. Dept. on Sept. 1, 1944. He was a case of sero-positive syphilis, and had received treatment as follows:

Aug. 19: N.A.B., 0.3 g.; bismuth, 0.1 g.
 „ 21: N.A.B., 0.15 g.; bismuth, 0.2 g.
 „ 24: N.A.B., 0.3 g.
 „ 28: N.A.B., 0.15 g.; bismuth, 0.2 g.
 „ 31: N.A.B., 0.15 g.

On transfer the patient was in coma, with the eyes wide open and face congested. There were spontaneous movements of both upper limbs. No neck rigidity. Pupils were equal, central, and reacting to light. Fundus examination showed blurring of the disks, more marked on the left, with congestion of the veins. Deep reflexes present; superficial reflexes absent; ankle clonus present; plantars flexor. There was a macular rash all over the body. Temperature 101.8° F. Heart, lungs, and abdomen: N.A.D. C.S.F.: Pressure, 70 mm. of water; fluid clear; chemically normal. W.B.C., 5,600/c.mm.—polymorphs 75%, lymphocytes 24%, monocytes nil, eosinophils 1%. Treatment was given as in the previous cases, and on the following day (Sept. 2) he was still in coma. Plantars indefinite. In the evening the patient became irritable and resented examination. The plantars became extensor. On Sept. 3 he was conscious but dazed. He answered to his name, but still resented examination. Plantars flexor. On Sept. 4 the patient was fully conscious, and thereafter convalescence proceeded normally.

Discussion

In view of the fact that once capillaries are damaged exudation into the surrounding brain substance is likely to occur, earlier writers (Lees, 1937; Harrison, 1937) have advocated venesection (to reduce congestion), dehydration with hypertonic saline solutions, and lumbar puncture. Cerebral oedema undoubtedly does occur, and is of the interstitial type accompanying head injuries; it is not necessarily associated with a raised intracranial pressure, provided there is free cerebrospinal-fluid absorption. This type of oedema occurs in cerebral contusion and malarial and other encephalopathies.

Cobb (1936) has clearly outlined the physiological mechanism of the cerebral circulation, and notes the following points:

Hydrostatic Factor.—"There is a falling gradient of pressure from artery to vein, steepest in that part of the curve which represents the arteriole. Changes in arterial pressure have very little immediate and direct effect upon capillary and venous pressure, whereas changes in venous pressure affect capillary pressure immediately and conspicuously; in fact, venous and capillary pressures change equally and synchronously."

Osmotic Factor.—"The capillary wall, being a semipermeable membrane... is permeable to all the important osmotically active dissolved substances of the blood except protein, so normally plasma protein tends to prevent movement of fluid out of the vessels. In the arterial capillary bed the hydrostatic pressure is greater than the opposing osmotic pressure of the plasma proteins. Therefore a protein-free fluid is filtered into the tissue spaces. On the venous side of the capillary bed, moreover, the hydrostatic pressure is less than the osmotic pressure of the plasma proteins, and the fluid is reabsorbed. . . . Any obstruction to venous flow, however, will raise the venous and capillary pressure to levels well above the osmotic pressure of the plasma proteins. Filtration from the plasma to tissue spaces will now take place throughout the capillary bed, whereas no real absorption into capillaries is possible; oedema results."

Effects of Posture.—(1) In the horizontal position the venous pressure measures 8 to 15 cm. of water. In the sitting position the cerebral venous pressure becomes negative to atmospheric pressure. (2) In the horizontal position the C.S.F. pressure is roughly equal throughout the ventriculo-subarachnoid system (100 to 160 mm. of water). In the sitting position the intracranial pressure becomes negative to atmospheric pressure, while the pressure in the lumbar sac nearly doubles.

The following table is an attempt to show what we conceive will happen on sitting the patient up; theoretically, the sitting posture should tend to prevent the onset of cerebral oedema (cf., elevation of a traumatized limb to prevent swelling).

Posture	Osmotic Pressure of the Plasma Proteins (mm. Hg)	Venous Capillary Pressure (mm. Hg)	Mean Reabsorption Pressure (mm. Hg)
Horizontal ..	25	12	13
Sitting ..	25	Approximates nil	Approximates 25

Finally, in presenting these cases as arsenical encephalopathy, the criticism may be levelled that they were in reality cases of cerebral malaria. That such may be so cannot be entirely

refuted, since we have seen in the past undoubted cases of cerebral malaria with negative blood slides but with positive brain smears.

However, that five should have occurred is more than a coincidence, and we believe these to have been of arsenical origin rather than malarial. It is most unusual, with three-hourly thick blood films and an expert microscopist, to fail to demonstrate parasites in a true cerebral malaria.

The value of the sitting posture in nursing these coma cases is in no way diminished, since this is the method applied by us with success in the treatment of malarial coma and of the coma of heat-stroke, and we hope that others will apply it to arsenical encephalopathy occurring in an area where malaria is not hyperendemic.

Summary

A brief description of arsenical encephalopathy is given and five cases are described.

That these five patients survived is attributed to the procedure of nursing cases in the sitting position.

The method of treatment is described and the physiology of the procedure discussed.

We wish to express our thanks to Col. F. R. Cawthorn, I.A.M.C., who, having early appreciated the value of a "team," kept its members together despite many difficulties; and to Major R. I. Krishnaswami, I.A.M.C., for help and criticism in the preparation of the paper. Our thanks are also due to the nursing officers, Miss D. J. Oliver and Miss J. St. John Inman, whose untiring efforts have contributed in no small measure to the successful treatment of these cases.

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PROLAPSE OF THE RECTUM IN WOMEN*

BY THE LATE

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Apparently it is not generally realized that prolapse of the rectum in women can be treated successfully by an abdominal operation. Nevertheless this is so, and I hope the following account will demonstrate that the method here described should be included in the armamentarium of those surgeons who have to decide the treatment of patients unfortunate enough to suffer from this distressing complaint.

The operation is one that should not be difficult in the hands of those who are accustomed to operate low down in the pelvis, and its guiding principle is self-evident. The desirability of "hooking it up from inside" must have occurred to surgeons, but I acknowledge my indebtedness to Victor Bonney—to whom, incidentally, gynaecological surgeons owe so much—for information as to whether this was or was not a practical proposition. In his book on operative gynaecology he has given a brief account of such an operation, and this can be consulted with advantage by those sufficiently interested.

A war widow aged 29 consulted me on the advice of a colleague of mine because of a prolapse that had occurred shortly after the birth of her first child, which had taken place five years previously. On examination I found that the prolapse was rectal and that some 4½ to 5 inches of bowel protruded. The tone of the anal sphincters was noticeably weak, and pelvic examination showed that the uterus

* The manuscript of this paper was received from the author on the day before he died.

and pelvic floor were relaxed and rather lower than normal. For the relief of this condition she had been operated on by a surgeon who had excised the protruding rectal wall from below in the manner accepted to be adequate, but this had not relieved the condition for long. Knowing the work of this surgeon, who was once a resident of mine, I am sure the operation had been well and truly done and that the failure was in the design of the operation and not in his execution of it. She then consulted a well-known proctologist, and his decision was given against further operation, but electrical treatment was instituted and some pararectal injections were made. Unfortunately no relief followed a persistent course of this treatment, and she was informed that now nothing could be done except a colostomy. This in a young woman of her mentality offered a grim choice from which she naturally shrank.

The patient now became desperate, both mentally and physically, as her whole life centred round the avoidance of calamities in which the bowel contents were suddenly voided. So I decided to operate on her by the abdominal route, having noted that she was a young and attractive woman and would probably wish to marry again. She was realist enough to know that it was the cure of the prolapse that was the target, and if during the course of the operation it should prove to be essential to take steps that would make future pregnancy undesirable that must be regarded as of secondary importance. To me, as the operator, this decision of hers was vital, as I should have to decide during the course of the operation whether to ligature the Fallopian tubes or not. If I were forced to attach the bowel on to the body of the uterus to give it adequate support a subsequent pregnancy might lead to disaster, and must therefore be rendered impossible.

Operation.—With the patient in the Trendelenburg position a lower median incision was made of length adequate to permit free access to the pelvis. The pelvic bowel and rectum were drawn up and a series of No. 2 silk stitches put in place so as to obliterate the pouch of Douglas and suspend the bowel to the floor and the posterior aspect of the vaginal wall. I found the use of Lane's cleft-palate needle-holder a great help in placing these deep and important stitches accurately. Taking care of course not to perforate the bowel, several more tiers were then superadded and the anterior aspect of the bowel supported on to the upper part of the posterior wall of the vagina and the lower third of the cervix, with precautions against leaving a peritoneal pocket into which small intestine could prolapse. Thus far the bowel was nicely and firmly held, and on pulling up the uterus to the position which it would occupy later when suspended, all seemed well, and so I decided against sterilization in this case, as it had not been necessary to attach the bowel to the body of the uterus, which would therefore be unaffected if it were ever subsequently enlarged by a pregnancy. In order to avoid any likelihood of leaving a possible source of obstruction by looping, the pelvic bowel was further spread out and attached to the posterior aspect of the left broad ligament and out on to the pelvic wall, of course avoiding the left Fallopian tube and ureter. On being satisfied on that count, the uterus was firmly suspended by plying the round ligament on either side from the uterine body out to the pelvic wall. The ends of these silk sutures were then drawn out through the sheath of the rectus on either side and sewn into it firmly. This gave a firm support. (Let me mention here that if it had worked out to be necessary to fasten the bowel on to the back of the uterine body to get adequate support I should have ligatured the Fallopian tubes and fixed the uterus into the abdominal incision by silk sutures.) The abdomen was closed, and on examination at the end of the operation the rectum was found to be very satisfactorily supported. The chief points in the after-treatment were to leave the bowel alone for seven days, and after that an easy and adequate action was produced by liquid paraffin and a small glycerin enema. A residue-free diet was given during these days.

Comment

I have waited for six months before making this report, and the result is so far excellent, and I can see no reason why it should not continue to be so. The bowel now acts readily with daily liquid paraffin, and the patient's evident happiness at the result of the operation is easily understood. Should she marry again later and become pregnant, and should I have to make the decision as to the method of delivery of the child, I should certainly advise Caesarean section and take no risk of any recurrence of her previous very undesirable condition. To this she readily assents, knowing what a recurrence of that condition would entail.

TUBERCULOSIS OF THE LOWER LOBE

BY

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Pulmonary tuberculosis as it affects the lower lobes has certain characters which deserve special consideration, and it is the object of this paper to call attention to the special features of treatment and prognosis of tuberculous disease in this situation. I have reviewed the clinical records of 2,200 cases of pulmonary tuberculosis in adolescent and adult women who have been treated in the sanatorium at Black Notley in the nine years 1935-43, abstracting those in which the disease was solely or predominantly affecting the lower lobe on one side. Only 81 such cases (3.68%) were found. Cases of tuberculous bronchiectasis—e.g., secondary to childhood bronchial obstruction by enlarged glands and subsequent atelectasis—and cases in which the disease had invaded the lower lobe by bronchogenic spread from one of the upper lobes, were excluded.

The low incidence of lower-lobe disease is striking. The incidence on the two sides did not show any significant difference (48 on the right, 33 on the left side). In 34 (42%) of the cases the apex of the lower lobe was affected, and 32 of these had progressed to cavitation by the time they came under supervision. This tendency to early cavitation of tuberculosis in the apex of the lower lobe is notable, and is worth bearing in mind when considering treatment.

In order to assess the results of treatment the 81 cases of lower-lobe disease have been divided into three groups, based on radiological appearances:—Group I (21 cases): Those showing tuberculous infiltration, including diseases of exudative type, but excluding those in which there was demonstrable cavity formation. Group II (28 cases): Those showing cavity formation, but excluding those in which the cavity occurred at the apex of the lobe. Group III (32 cases): Those in which a cavity had formed at the apex of the lower lobe.

The following is a review of the treatment given. Where pneumothorax is referred to it may be taken to include thoracoscopy, and division of adhesions whenever practicable.

Of the Group I cases, 16 were treated by an initial period of bed-rest alone, which secured quiescence of the disease in 11; an artificial pneumothorax was induced in 4 of the resistant cases and quiescence ultimately secured, though one required a phrenic avulsion in support of the pneumothorax. Of the remaining cases, 3 were successfully treated by early induction of a pneumothorax, 1 by a phrenic avulsion, and 1 by intravenous gold.

Of the Group II cases, 4 were treated by an initial period of bed-rest, which succeeded in 2; one of the remainder was successfully treated by pneumothorax. Of 13 cases treated by early pneumothorax, 10 succeeded, 1 was successful when reinforced by a phrenic avulsion, and 2 were abandoned owing to rapid spread of the disease. Phrenic paralysis alone succeeded in 7 out of 10 cases, the 3 failures subsequently becoming quiescent after treatment by pneumothorax. One case in this group retrogressed in spite of a phrenic avulsion combined with intravenous gold therapy and followed by pneumothorax.

Of the Group III cases, 10 in which the apical cavity was small were treated by bed-rest alone, 8 successfully. Of 16 cases treated by artificial pneumothorax, complete quiescence was secured in 12, 1 had to be reinforced by a phrenic paralysis, and 3 failed entirely. Five cases were treated by early phrenic paralysis—3 succeeded and 2 failed. One other case became quiescent after a course of intravenous gold, but the relative importance of the gold and the concomitant bed-rest was uncertain.

Treatment by Pneumoperitoneum

The use of pneumoperitoneum in the treatment of pulmonary tuberculosis has added another weapon to our armamentarium which most tuberculosis workers agree is of real value in selected cases. One of the indications seems to be disease of the middle and lower lobes, and subsequent to the series of cases reviewed in this paper I have treated a number of cases of mid- and lower-lobe disease by phrenic paralysis followed by pneumoperitoneum. The results so far have been very

J. K. David and A. S. Minot (*Amer. J. Dis. Child.*, 1944, **64**, 327) record a case of recurrent haemolytic anaemia in a male infant aged 4½ months. Haemolytic activity of the patient's serum took place during an acute haemolytic crisis. After splenectomy the haemolytic activity was no longer demonstrable in the patient's serum and recovery followed.