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

RAYMOND C. COHEN, M.D., D.P.H.

Deputy Medical Superintendent, and Physician to Pulmonary Tuberculosis Unit, Essex County Council Hospital, Black Notley

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.

successful, particularly with middle-lobe cavities and cavities in the middle or periphery of the lower lobe. For the treatment of cavities in the apex of the lower lobe the efficiency of pneumoperitoneum is not so clear.

Prognosis

The prognosis of tuberculosis of the lower lobe has generally been regarded as poor, but it seems that this is an unjustifiably gloomy view to take. In cases without cavity formation (Group I) the prognosis with suitable treatment appears to be good, as the only unsuccessful case in the present series was that of a patient who discharged herself before treatment was completed. In Group II also, quiescence was ultimately secured in 25 out of 28 cases, and the prognosis is apparently good, though more active measures may be required for treatment than in Group I. Where the cavity affects the apex of the lower lobe, however, the outlook is not so favourable (Group III, 25 cases becoming quiescent out of 32—a "failure-rate" of 21.9%). There was a lower proportion of successful pneumothorax cases in this group. The probable explanation of this is that when the lung is collapsed the apex of the lower lobe moves into the paravertebral gutter and escapes compression.

Discussion and Conclusions

While it cannot be claimed that the figures quoted in this series are statistically significant, they represent the experience of a large sanatorium over a period of nine years, and it is probably justifiable to draw certain conclusions based on clinical observation of these cases. These conclusions are:

1. The incidence of lower-lobe tuberculosis is low (3.68%) in a series of 2,200 cases of pulmonary tuberculosis in adolescent and adult women.
2. There is a distinct tendency to early cavity-formation.
3. The immediate prognosis with adequate treatment is better than has usually been thought.
4. If a cavity has formed by the time the patient comes under treatment it is not wise to rely on too long a period of bed-rest alone, and more active treatment should be given as soon as the patient is clinically fit for it.
5. For cavities not at the apex of the lower lobe a phrenic crush followed by pneumoperitoneum offers a good chance of success, and is probably the best initial treatment. Artificial pneumothorax should be held in reserve for these cases, however, and if the cavity is not showing signs of closure after two months the pneumoperitoneum is unlikely to succeed, and pneumothorax should be attempted.
6. Where the cavity is at the apex of the lower lobe an initial pneumothorax seems to be the best treatment. I have not yet had enough experience of phrenic paralysis followed by pneumoperitoneum in cases of this group to express an opinion whether such treatment will overcome the difficulty of the apex of the lower lobe retreating into the paravertebral gutter when collapse therapy is applied to the lung. It seems unlikely that elevation of the diaphragm, even to the height which can be secured when phrenic paralysis is reinforced by pneumoperitoneum, will have more influence on the apex of the lower lobe than pneumothorax followed by adhesion section. At the same time, if a pneumothorax fails to secure complete closure of the cavity, elevation of the diaphragm may tip the scales in the patient's favour by providing a little extra relaxation to the lung, or possibly, in some cases, by "unkinking" a bronchus which had been partially obstructed and maintaining a retention cavity.

My thanks are due to Dr. W. A. Bullough, County Medical Officer, and Dr. M. C. Wilkinson, medical superintendent, for permission to publish the results.

As a war memorial to children killed by enemy action in London a beautiful and up-to-date children's ward is planned for St. Thomas's Hospital. During the air raids on London there were 12 direct hits on the hospital by high-explosive bombs and 2 by flying bombs, in addition to the fall of a large number of incendiaries. St. Thomas's carried on, caring at the same time for the many people brought in as casualties from incidents in the neighbourhood of the hospital. In September, 1940, two house-surgeons, three nurses, and four masseuses were killed by enemy action. There were no casualties among the patients during the raids.

PREVENTION OF MIGRAINE BY ORAL ADMINISTRATION OF CARBACHOL

AN ANALYSIS OF 12 CASES

BY

ALASTAIR KER JAMES, M.B., Ch.B.

It is now generally accepted that the immediate cause of the symptoms of migraine is spasm and distension of the cerebral arteries, particularly those of the scalp and the dura mater; and Rowbotham (1942) summed up the evidence in favour of this view. Many years ago other observers (Féré, 1883; Flatau, 1912) noted vascular changes during the course of attacks of migraine.

In view of this evidence it seems curious that there appears to be no record of any attempt to treat migraine by the administration of a parasympatheticotonic; but it was clinical observation and not therapeutic theory which encouraged me to follow up the unexpected results in Case 1, in which an attempt to remedy obstinate constipation due to an enormously dilated and elongated colon resulted in a marked improvement in migrainous attacks without much alteration in the bowel action. This was effected by giving one tablet of moryl—a proprietary preparation containing 0.002 g. of carbaminoyl-choline chloride (carbachol B.P.)—thrice daily, but the patient later received twice that amount. The preparation named has been used throughout this experiment; the word "tablet" signifies a dose of 0.002 g. of carbachol.

Further cases of migraine were similarly treated as they arose, and the results seem to merit publication. Though the series is admittedly small, improvement has been consistent, the method is easy and inexpensive, and no alteration in diet or mode of living has been made. All the cases tabulated suffered from the classical symptoms of migraine—viz., periodic attacks of severe headache, often unilateral, generally preceded by visual disturbance, and always followed by vomiting or severe nausea, after which recovery ensued more or less rapidly.

Case 1 suffers from the colonic abnormality previously noted. Case 4 has pulmonary tuberculosis. No. 2 died of periarteritis nodosa three months after treatment by carbachol was begun. The remainder of the patients are in normal health. Some of the series have been taking carbachol continuously for many months, and no toxic symptoms have been observed apart from an occasional mild sensation of heat in No. 8, who takes six tablets daily.

Tabulated Summary of Results

Case	Age and Sex	Duration of Disease (Years)	Average No. of Attacks per Month			Daily Dosage of Carbachol (g.)	Duration of Carbachol Treatment (Months)
			With No Treatment	With Ordinary Treatment	With Carbachol		
1	56 F	46	—	1.5	0.75	0.012	33
2	56 M (1937)	45	10	8	4	0.006	3
3	33 M	4	4	1.2	0.75 very mild	0.006	28
4	37 F	9	1	—	0.16	0.004	20
5	19 F	5	10	4	0.2	0.008	11
6	14 M	7	12	4	0	0.006	6
7	36 F	22	8	—	0	0.006	9
8	52 M	12	10	4	1.25	0.012	11
9	44 F	30	3	—	0.3	0.004	7
10	29 F	15	3	—	0.4	0.006	7
11	23 F	4	2	—	0.4	0.006	5
12	24 F	5	8	—	1	0.006	2

The results are consistent and better than those of the commonly used remedies, and the beneficial effect is similar to that obtained in epilepsy by phenobarbitone. Sufficient time has not yet elapsed to form any conclusions whether the improvement remains permanent after discontinuing the drug. It seems probable that the oral administration of carbachol produces a less intense but more prolonged effect than injection. Cases in which migraine persists after the age of 50 seem to require larger dosage. It was further noted that the systolic blood pressure in the older age groups was low—average 124—which, together with the fact that in three cases known to me the attacks of migraine gradually ceased with the gradual increase in systolic blood pressure, suggests that only soft and elastic