involvement. Two cases of fatal purulent meningitis are recorded by Huang. Stevenson and Wills (1933) have reported a "primary" *Salm. enteritidis* meningitis in a child of 9 weeks. Pyelitis and pyelonephritis are common in the recorded cases. Harvey (1937) and Guerra have reported the occurrence of *Salm. enteritidis* osteomyelitis. Barwell (personal communication, 1947) describes a case of amoebic liver abscess in which *Salm. enteritidis* (Chaco variety) was found in the pus from the abscess.

Pulmonary Involvement.—The recovery of *Salm. enteritidis* from the sputum has often been reported, but only two cases of pulmonary involvement could be found. McNee (1921) describes a case of "influenza bronchopneumonia" in which necropsy findings were haemorrhagic peribronchial areas with pus in the bronchi, from which *Salm. enteritidis* was cultured. Smith and Scott (1930) report a case of *Salm. enteritidis* septicaemia in which consolidation of the right upper lobe developed. The rarity of the pulmonary involvement is contrasted strikingly with the comparative frequency in typhoid and paratyphoid fevers and in infection by *Salm. cholerae-suis*.

Case Report

A merchant seaman aged 48, a native of Barbados, was admitted to the Seamen's Hospital on Feb. 6, 1946. He complained of several weeks' headache and sweating. He also had some shortness of breath and had recently developed anorexia with occasional vomiting. He had a history of malaria and had been treated for nutritional oedema in 1945 at Durban.

On admission his temperature was 101.4° F. (38.55° C.), but there were no abnormal physical signs except a furred tongue and a dermatitis on his back and arms. The initial white-cell count was 12,900 (82% polymorphs) and the blood urea 49 mg. per 100 ml. The urine contained albumin, pus, and a few red cells. The chest showed no radiological abnormality at this stage.

Pyrexia continued, with peaks of 104 to 105° F. (40 to 40.6° C.), and six days after admission a course of quinine and mepacrine was tried empirically. The pyrexia did not respond to this therapy. Twelve days after admission he developed a coliform cystitis which responded to potassium citrate, and he became afebrile for a week, with much clinical improvement.

On the 24th day after admission he again became febrile and developed a cough with "rusty" sputum. Examination revealed fine crepitations over the right upper lobe and signs of a small effusion at the left base. A skiagram now showed the presence of a thick-walled abscess cavity in the right upper lobe and a small left basal pleural effusion. Further radiological examinations during three days showed an increase in size of the abscess, which lay in the axillary-pectoral segment of the right upper lobe. A second smaller cavity developed in the left upper lobe, but this diminished in size subsequently.

The patient's condition slowly deteriorated, and he was soon producing 4–6 oz. (110–170 ml.) of foul sputum daily. There was no response to penicillin or sulphonamide therapy, and on March 22 he was transferred to the London Chest Hospital for surgical drainage. At this stage his main complaint was a sharp pain in the right side of the chest, and his temperature was continually about 101.6° F. (38.7° C.). Clubbing of the fingers had not developed, but the dullness at the right upper lobe and showers of fine crepitations were still present. His white cells numbered 34,000 (polymorphs 70%), and his haemoglobin was 66%.

A course of penicillin (500,000 units daily) was again started, and on March 24 the abscess was drained through the axilla. Specimens of pus from the abscess, the sputum, and the blood all produced *Salm. enteritidis* on culture. However, the patient became stuporous two days after the drainage and developed marked meningism. The cerebrospinal fluid was sterile on culture, and there were no abnormalities in pressure or cell count. The patient's condition gradually deteriorated, and generalized

oedema developed. He died on April 4, eight weeks after his original admission.

Necropsy revealed a marked increase in intracranial tension, with numerous abscesses and septic infarcts but no meningitis. The whole of the right upper lobe of the lung consisted of a sloughing pneumonitis with central cavitation, and there was a thin-walled abscess in the left upper lobe. Ulceration of the ascending and lower descending colon was present, non-specific in character. The liver and spleen were normal.

The bacteriological investigation (Dr. Joan Taylor, Salmonella Reference Laboratory) showed that this particular organism was the Chaco variety of *Salm. enteritidis*, which had been isolated in India and South America but not previously in this country.

We are indebted to Dr. E. H. Hudson, Dr. Keith Simpson, Dr. C. E. Sundell, and Mr. Vernon Thomson for permission to publish this case and for their helpful criticism.

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Medical Memoranda

Direct Inspection of Coarctation of Aorta with a Thoracoscope

A study of the literature reveals that a coarctation of the aorta has never been reported as having been seen through a thoracoscope, nor has the use of this instrument as a means of identifying abnormalities of the great vessels been described, though Fatti (1949—personal communication) used the procedure before performing Blalock's operation.

In the case here described there was a chance combination of two diseases—coarctation of the aorta and pulmonary tuberculosis. A therapeutic pneumothorax was induced and the presence of adhesions indicated thoracoscopy. An opportunity for direct inspection of the coarctation was thus presented. We were able to confirm the presumptive diagnosis and to determine the exact position and extent of the lesion and its relation to the subclavian artery.

CASE REPORT

The patient, a woman aged 22, had a haemoptysis in July, 1948. She was x-rayed, and pulmonary tuberculosis was diagnosed.

On admission to the tuberculosis unit of St. Stephen's Hospital she felt well, had only a slight cough and a trace of sputum, had not lost weight, but had had some headaches which were not severe. The feet were always cold, even though she used a hot-water bottle to try to keep them warm.

Her general condition was good; she was afebrile and her weight was 7 st. 12 lb. (49.89 kg.). There were no physical signs of pulmonary disease. Examination of the cardiovascular system revealed a normal-sized heart with a blowing systolic murmur heard all over the praecordium, and equally well heard in the interscapular region, especially on the left side. The blood pressure was 200/95 in the right arm, 210/90 in the left arm, 190/100 in the right leg, and 190/100 in the left leg. There was visible and increased carotid pulsation, but no evidence of abnormal collateral circulation over the chest wall. The femoral pulses, though present, were difficult to feel, and were later than the radial pulses.

A radiograph of the chest showed diffuse miliary-type infiltration throughout the left lung. The right side was normal, as was the heart size; the aortic knob was small, and the pulmonary conus was not enlarged. There was no rib-notching. The electrocardiogram was normal. Sputum once showed scanty tubercle bacilli.

A diagnosis of pulmonary tuberculosis complicated by a mild degree of coarctation of the aorta was made. Dr. Paul Wood, who saw her in consultation, thought that the diagnosis of coarctation of the adult type was likely.

After a period of bed-rest and para-aminosalicylic acid the patient's condition was even better than on admission; her erythrocyte sedimentation rate had fallen from 30 to 7 mm. Westergren. The radiograph was unchanged. Tomography showed a cavity in the left infraclavicular region. A left artificial pneumothorax was induced on Feb. 16, 1949, without incident. Adhesions were present. In the absence of evidence of gross chest-wall anastomoses thoracoscopy was considered to be a justifiable procedure.

The operation was performed by one of us (J. R. B.) on March 4. The few apical adhesions which were present were divided without haemorrhage from the cut ends. After this the aorta was examined both above the upper lobe and through the fissure, and the whole length from arch to coarctation was seen. The notch was easily visible at the posterior end of the fissure, and was rather deeper than had been anticipated from the clinical picture. It was a short constriction and well below the origin of the left subclavian artery—the second type described by Salén and Wiklund (1948). Convalescence from thoracoscopy was not complicated by intrapleural haemorrhage.

COMMENT

Since Gross (1949) reported a case in which a graft had been successfully implanted in a boy in whom a long segment of aorta had to be removed in order to excise the stenosed segment completely, an accurate pre-operative diagnosis of the anatomy of the coarctation has become more important.

The method of angiocardiology using a systemic vein as the site of injection does not give very satisfactory results owing to excessive dilution of the medium. As an alternative, dye may be injected by introducing a catheter through the brachial artery, as has recently been done in Scandinavia.

It is suggested that there may be a place for thoracoscopy, as a view of the actual lesion must be far more informative than any radiological technique. The risk entailed must necessarily be haemorrhage from the anastomotic vessel on the chest wall, and, although this problem was not encountered in our case, it was not one in which complete obstruction was present. To avoid this risk it may be wise to introduce the thoracoscope high up, possibly in the second space anteriorly. Rib-notching is seldom seen in the upper two or three ribs, which may indicate that the collateral circulation is not extensive at this level, although J. Chesterman (1949—personal communication) states that the vessels are greatly dilated in all the intercostal spaces in specimens he has had the opportunity of investigating by injection at necropsy.

We would like to thank Mr. T. H. Holmes Sellors and Dr. Alec Wingfield for their encouragement.

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Artificial Pneumoperitoneum Associated with Strangulated Hernia and Scrotal Pneumocele

It has not been possible to find an account of strangulated hernia complicating artificial pneumoperitoneum treatment. The following case is therefore recorded.

CASE REPORT

A man aged 22 was referred to the Bedford Chest Clinic in October, 1946, because of persistent tachycardia. An x-ray film on Oct. 22, 1946, showed shadowing in the left upper zone, suggesting tuberculous infiltration. The right lung was clear. An artificial pneumoperitoneum was induced on Jan. 19, 1947. A left phrenic crush was done on Feb. 15. A rise in position of the left diaphragm of approximately 3 in. (7.5 cm.) was obtained by these means. The patient has done no heavy work since his lesion was diagnosed. His refills have been given at approximately ten-day intervals, 1,000 c.cm. in amount. His final pressure has averaged +4 to +6, and the highest ever recorded was +9 on two occasions in November, 1947.

His left phrenic nerve was recrushed on Feb. 14, 1948. He was last refilled on Oct. 1, 1948. Final pressure +3 to +6.

About October, 1947, he had noticed a small painless "lump" below the right inguinal canal. On Oct. 5, 1948, he noticed a sudden increase in the size of the swelling. Severe pain developed accompanied by vomiting. Six hours later a tender tense swelling was present in the right inguinal region, extending into the scrotum and reaching the upper pole of the right testicle. The swelling was irreducible, size about 3½ in. (8.75 cm.) long by 1 in. (2.5 cm.) wide. After administering morphine and atropine the hernia was reduced by taxis with some difficulty. Immediately following this procedure the right side of the scrotum became distended to about the size of a grapefruit. The testicle was covered but could be felt below the swelling, which was not tender. This swelling could be easily reduced, but it rapidly re-formed. It was undoubtedly caused by air. A pressure pad placed over the external ring retained the swelling without difficulty.

An operation for right inguinal hernia was performed. An air-distended processus vaginalis was demonstrated, dissected down, and found to include the testis.

COMMENT

The interest in this case lies in the fact that no reference has been found in the literature to the occurrence of strangulated (incarcerated) hernia accompanied by a scrotal pneumocele complicating pneumoperitoneum treatment. Meltzer (1948) describes a case of scrotal pneumocele, and quotes four others as the only cases that he has found in the literature. Nagley (1948), however, quotes a case of inguinal hernia, and also adds three cases of scrotal pneumocele. Bennett (1938), in a review of 200 cases of pulmonary tuberculosis treated by pneumoperitoneum, had three cases of hernia develop, none strangulated, but treatment was discontinued. Rilance and Warring (1944) report a case of a patient who had a small inguinal hernia sac which was filled with fluid from the peritoneal cavity by coughing. This could not be reduced until 25 ml. of fluid was aspirated. Daniels and Eisele (1938) describe two cases of inguinal hernia in which increase in the size of the scrotum occurred during pneumoperitoneum treatment. This they ascribed to air. Banyai (1946) also quotes two cases of inguinal hernia, not started by pneumoperitoneum treatment, but made worse by it. Crow and Whelchel (1945) report an emphysematous type of inguinal swelling occurring in something under 2% of 546 patients. They treated this by reduction of the swelling and the fitting of a truss.