mechanisms by which the symptom of dysmenorrhoea may be produced. Psychological attitudes and allied emotional states may lead to increased interest and awareness of physiological uterine functions or to an autonomic endocrine disturbance affecting uterine function, or to both. In the second case, as elsewhere, the pain might easily arise from relative ischaemia through disturbance of the relation between the reciprocally innervated muscular contraction of body and cervix and the vasomotor state of the organ.

Sterility.—In the sterility patients production of active spermatozoa by the husbands was known to have occurred. Similarly, in these patients organic disease affecting the general health, and relevant pelvic conditions such as blocked tubes, have been excluded by careful examination by our gynaecological colleagues. Our investigation showed that, as in the case of dysmenorrhoea, patients who later complained of sterility were even as children different from the control group of primigravidae of the same age. The well-known clinical overlap between primary dysmenorrhoea and sterility is reflected in the presence of a common personality type in both groups described. The main group of sterile patients, however, are not of this particular type, either as children or as adults, but display as a main characteristic a self-centredness and lack of warmth in their social and personal relations, clearly seen in a sexual frigidity of which their abnormal reaction to coitus forms an impressive index. As to the mechanism by which the personality of the patients is related to their sterility, experience shows that sterility is unlikely to be the direct result of infrequent intercourse. Many gynaecological authors, both ancient and modern, have suggested that the mental attitude of the woman (Aristotle), inhibition of orgasm by unrecognized anxiety, or lack of orgasm through emotional immaturity may interfere with conception by preventing the progress of spermatozoa (Duncan, 1884; Rubin, 1933; Fairbairn, 1928; Anspach, 1934; Gellhorn, 1931). This might result from dryness of the vagina, from failure or reversal of possible vaginal peristaltic movements, or through spasm of the muscles of the pelvic floor and the cervix, with failure to retain the seminal fluid. It has further been suggested by gynaecologists that emotional development and frame of mind may affect the endocrine processes controlling ovulation and implantation (Kehrer, 1922). To the solution of these problems hormonal research may furnish new clues.

Summary

Fifty-seven unselected patients with primary dysmenorrhoea, 30 unselected patients complaining of sterility, and 30 primigravidae who had never suffered from dysmenorrhoea were submitted to a biographical study covering childhood characteristics, reaction to adolescence, and adult personality.

Comparing the three groups as children, psychologically well-adjusted types were found in great excess in the control group, and only two of this type were noted in the sterility and dysmenorrhoea patients.

As children the dysmenorrhoea group showed psychological maladjustment four times as often as the control group. Of these maladjusted types the sterile group contained a high excess of ailing, timid, unsociable children, devoid of self-assertion, while the dysmenorrhoea group contained an excess of children who were boisterous and manifestly aggressive—obstinate, bad-tempered, or headstrong.

As adults the dysmenorrhoea patients showed a high excess of two main personality groups—the first characterized by deep resentment of their feminine role; the second obviously immature physically, and either shy and shut in or chronically anxious and complaining. As adults a vast majority of the sterile patients display an unusual self-centredness in their social and personal relations, clearly seen in a sexual frigidity, with abnormal reactions to coitus.

Prof. Browne and his staff at University College Hospital and the Medical Committee and staff at the Soho Hospital for Women were good enough to arrange access to these patients and to the clinical notes. We are greatly indebted to them. The work was done during the tenure of Fellowships endowed by the Sir Halley Stewart Trust and the Rockefeller Foundation.

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TRAUMATIC CHYLOTHORAX

BY

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AND

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Rupture of the thoracic duct is a calamity which many a surgeon does not encounter once in his lifetime. Since Longelot first described the condition in 1663, Shackelford and Fisher (1938) have succeeded in tracing only 41 authentic instances, and many years have elapsed since chylothorax was last mentioned in the *British Medical Journal*.

Although our experience is limited to a single unsuccessful case we are led by the rarity of the injury to describe this patient's history as fully as possible.

Case History

On August 16, 1940, a collier aged 32 years ate a large breakfast of bacon and eggs at 6 a.m. He was working underground at 9.30 when he was thrown backwards by a stone which struck him in front of the chest. As he fell his dorsal spine was brought into violent contact with the square-cut edge of a block of coal. He experienced an immediate feeling of constriction in the chest and acute pain in the left knee-joint, but a moment or two afterwards was able to crawl away.

When Dr. R. M. Marshall examined him two hours later there was no dyspnoea and the degree of shock was trivial. The patient was most concerned about "a gripping tightness" in the right chest, and this was thought to result from a linear abrasion which traversed the back horizontally at the level of the tenth dorsal vertebra. Radiographs which were made at Port Talbot Hospital on the following day disclosed a fissured fracture of the left tibia and possible damage to the body of the ninth thoracic vertebra with no displacement. The ribs had all escaped injury, and there was no evidence of a pleural effusion.

On August 18 the temperature rose to 100° F., and for the first time there was some dyspnoea. A tentative diagnosis of pneumonia led to the administration of sulphapyridine tablets. On August 19 the patient collapsed; his pulse rate was 130 per minute, his temperature was subnormal, and his respirations were rapid and distressed. We decided to aspirate a moderate-sized right-sided pleural effusion, and to our surprise a quantity of fluid which resembled pale tomato soup

was withdrawn. The pathologist's report indicated that we were dealing with a case of chylothorax.

The initial aspiration produced a temporary improvement, and energetic steps were then taken to restrict the intake of fats and to rely on rectal feeding. It was impossible to control the outflow of chyle, however, and on August 21, against our better judgment, we again felt obliged to aspirate. On this occasion five pints of similar fluid were removed and relief proved dramatic. Although obviously wasted, he became cheerful and was quite free from pain. Continuous intravenous glucose-saline was now administered, but again and again chyle accumulated, and in all twenty-seven pints had been aspirated by August 27, when the patient died in a state of exhaustion. Dr. A. F. Sladden, who undertook a post-mortem examination, has been kind enough to furnish the following notes:

"During life a sample of fluid aspirated from the right pleural cavity was examined and found to be sterile and free from excess of leucocytic cells, but milky in consistency and appearance. Further analysis showed the presence of fat to the extent of 0.83%, and the effusion was accordingly regarded as chylous in nature. At the post-mortem examination the right lung was found collapsed, with some chylous effusion around it. No effusion was present on the left side. The parietal pleura as it lay along the spinal column was torn to form a diamond-shaped gap 3 inches long and 3/4 inch wide, the greater length of the 'diamond' being in the line of the spine on its right lateral aspect. The centre of this lesion lay across the level of the ninth and tenth thoracic vertebrae, and the junction of these two vertebral bodies was completely fractured though there was no displacement. The anterior ligaments had been completely torn across, and this injury had also severed the thoracic duct as it passed upwards along the spine. From this torn duct chyle had leaked into the right pleural cavity and had caused profuse effusion of fluid around the right lung."

Discussion

McNab and Scarlett (1932) in an authoritative article on traumatic chylothorax mention that rupture of the thoracic duct most frequently causes an effusion into the right pleural cavity. They suggest that this occurs because the duct is on the right side for two-thirds of its thoracic course, the aorta forming a barrier to the left. In the experience of these clinicians there is seldom a history of crushing violence, and, excluding penetrating wounds, trauma is usually due to a sudden and exaggerated lordosis of the spine, causing excessive stretching of the duct. They hold that rupture is more likely to occur shortly after the ingestion of a large meal, when the duct is distended by chyle. Usually a silent post-accident period of three or four days is followed by the abrupt onset of dyspnoea, rapid thready pulse, pallor, cold sweats, and profound shock. The injury has proved fatal in 50% of the recorded instances.

Clearly the case we have described does not in any way upset the general conclusions of McNab and Scarlett, but it may provide a means of accounting for the "latent period," which is so mystifying. It is quite conceivable that after rupture of the thoracic duct the chyle, which is not under any marked pressure, first accumulates behind the fairly resistant pleura. When a portion of the latter membrane becomes tense enough for its blood supply to be depleted erosion would be simplified and subsequent outpouring of chyle would precipitate symptoms of intense shock. Our only evidence in support of this theory is the diamond-shaped pleural tear described by Dr. Sladden, which might have resulted as readily from erosion as from trauma.

Treatment

The methods of treatment which have been recommended in traumatic chylothorax are varied and in some instances contradictory. They include: (1) abundant administration of fluids by mouth; (2) curtailment of fluids and the institution of rectal feeding; (3) a fat-free diet; (4) a diet rich in fats (one practitioner actually adminis-

tered chyle by mouth!); (5) whole-blood transfusions and continuous intravenous glucose-saline (since treating our case we have learned that glucose causes a rise in lymph pressure, so that in all probability this measure is harmful); (6) the creation of a positive intrathoracic pressure by means of artificial pneumothorax—apparently this cannot possibly compress the ducts enough to prevent the outflow of chyle; (7) thoracotomy, with removal of large clots—the aim of this more heroic measure appears to be the production of adhesions around the leaking duct; (8) reintroduction of extravasated chyle.

The last-mentioned treatment strongly appeals to us, and we regret our ignorance of the technique when our case was under observation. Bauersfeld (1937) describes a patient suffering from chylothorax whose condition steadily retrogressed until tubing from a needle in the chest was connected with a direct transfusion set and the fluid was reintroduced into the right median basilic vein. The general condition then steadily improved and weight increased rapidly. It may be, as Bauersfeld modestly suggests, that sealing of the tear in the duct occurred in the period during which intravenous chyle was administered; but even if this be so it does not detract from the value of his novel treatment.

Unduly impressed, perhaps, by our recent experience, we feel bound to advise that even in trivial injuries to the neck, chest, and spine the possibility of damage to the thoracic duct must always be envisaged. Moreover, in these days of falling masonry and of stabbing and bullet wounds it is not unlikely that chylothorax may be met with more frequently than in the past.

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COMMON BILE DUCT OBSTRUCTION IMPORTANCE OF SURGICAL DECOMPRESSION

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In spite of the growth of hepato-biliary surgery the patient with jaundice as a result of common bile duct obstruction still represents a complex surgical problem. Many investigations of this pathological state are being carried out to-day, and it is only by examining the physiological, clinical, and surgical aspects of the question that new advances can be made.

In the past decade the importance of the mechanical alterations in the biliary system has come to be recognized. This is of value because not infrequently they are the sole cause of the severe damage to the liver and are also often associated with other inflammatory conditions. It is necessary to study these mechanical alterations in the biliary system in two sets of circumstances: (1) during the obstruction of the common bile duct; and (2) during the decompression of the biliary tree.

Effects of Obstruction of the Common Bile Duct

In reference to the former, the most important consideration is the phenomenon of biliary hypertension. It is well known that the bile pressure increases progressively after obstruction of the common bile duct, and this increase in pressure is responsible for the dilatation of the intrahepatic and extrahepatic bile channels. This