Discussion

The large numbers of early weanings in Newbiggin contrast forcibly with other investigations on the subject. The Ministry of Health Report (1944) estimates that 95% of babies born in the district are wholly breast-fed when the midwife leaves. Finlay, quoted by Spence (1938), in a home-visit investigation of 3,000 cases in Edinburgh found that 87% of the babies were breast-fed at the 10th to 14th day. Robinson (1939), analysing 439 Liverpool welfare cases, found that 86% were breast-fed at 2 weeks.

A report to the British Paediatric Association, 1942, on breast-feeding in Birmingham (with special reference to female labour) shows similar figures—e.g., in 1937, in 13% of 4,378 cases the children were not breast-fed at the first visit. Similar figures occur in 1941 and 1942. These investigations, however, do not cover whole populations but deal with selected groups.

Why, then, the Newbiggin figures? In the main work described here the data were collected by me from the mothers at the infant welfare centre. Nearly all the dates of weaning were noted within a few weeks of the occurrence, and in the many cases of weaning by 2 weeks it was noted at the first attendance, usually at 3 to 4 weeks of age. This was done simply as an easy way of getting the facts as soon as possible. Later, however, I began to wonder if it were not a rather important point. In asking several mothers about the feeding of previous children two or three years back I was able to check their accuracy with the week-to-week records kept at the time, and the replies very often diverged from the recorded facts—i.e., the child would be said to be weaned at 3 months when it was actually 5 weeks. Indeed, my own figures for 1943 (see Table II) are open to this doubt, since illness prevented me from collecting some of the data as promptly as usual.

This experience raises a doubt about the accuracy of dates of weaning recorded in large-scale investigations relating to a year or two back. So long as breast-feeding is held to have the moral value referred to in the Ministry of Health Report, so long surely will mothers tend to give an "acceptable" reply when asked about the weaning of their children. Indeed, this moral atmosphere probably colours all replies on the subject. My experience of analysing health visitors' records suggests, too, that the first visit may be at a very variable time after the birth.

Attention has been directed by the work of Robinson (1943) and of Waller (1946) to the physiological mechanisms inherent in lactation. No attempt has been made in this work to assess the factor of overloading (Waller, 1943, 1946) in the early weaning, and it may exist in cases unsuspected even by experienced midwives.

Undoubtedly there seems here to be a large social element. Custom or fashion, overcrowding, lack of privacy, and the presence of an older woman who will quite literally "hold the baby" are all possible contributory causes.

Do colliery districts in other parts of England present similar problems? Is overcrowding a factor elsewhere? Is the desire "not to be tied" an unexpressed but important cause? And is there support in other counties for the suggested difference here between mining and rural areas?

Summary

The incidence of breast-feeding has been studied over five years in a mining town in Northumberland (548 cases, forming 89.4% of the babies born and living there 6 months). It was found that 29% of these babies were weaned by 2 weeks and 39.5% by 1 month of age. These figures are supported by health visitors' records for 1944-5 in another mining area, and a contrast is suggested with a rural area. Further investigation of these differences seems advisable.

The cause of the large number of early weanings is discussed.

I wish to thank Dr. Stephenson, of Newbiggin, for the information quoted, and the health visitors and midwives for their ready help and co-operation. I also thank Dr. Jamieson, county maternity and child welfare officer, for the interest she has shown, and Dr. Tilley, county medical officer of health, for permission to publish this work.

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SURGICAL SIGNIFICANCE OF AORTIC DISSECTING ANEURYSMS

REPORT OF THREE PERSONAL CASES WITH TWO CORRECT ANTE-MORTEM DIAGNOSES

BY

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The symptoms caused by aortic dissecting aneurysms occasionally suggest surgical abdominal disease. Although about half the sufferers from this condition succumb in less than 12 hours, it is not uncommon for death to be postponed for over a week, and recovery for a varying period, though infrequent, can occur. Hence a correct diagnosis, or, at the worst, recognition of the condition at operation, would be of great assistance from the point of view chiefly of prognosis and also in the event of any reasonably successful form of treatment being devised.

The condition has rarely been diagnosed ante mortem. Shennan (1934) could find records of only six such cases, although about eight others have been described since. It is possible that more frequent correct diagnoses could be made were the condition borne in mind, and it is felt that a brief summary of the pathology, symptoms, and physical signs, together with the details of three personal cases, would be of value.

Pathology, Symptoms, and Physical Signs

Pathology.—The condition probably arises from a tear in a diseased medial coat (Moriani, 1910), the immediate exciting factor being a temporary rise in blood pressure. Less commonly an atheromatous plaque may determine the site of rupture. Syphilis is rarely associated. The split is most commonly situated in the ascending aorta and occurs less often as the vessel is traced downwards. The dissection is rarely localized and sacular, but usually spreads for a variable distance downwards, and has been known to reach the popliteal arteries (Tessier, 1842). Proximal dissection, though usually slight, may be extensive. Death is usually caused by rupture, most commonly (70%) into the pericardium, but also into the mediastinum, pleural space, peritoneal cavity, or retroperitoneal tissues. The aneurysm may rupture back into the lumen of the vessel, although this course does not necessarily prevent rupture to the exterior. There is little relation between the site of the tear, the length of the dissection, and the time of survival.

Symptoms and Signs.—The onset is rapid, and is often associated with physical or emotional strain. There may be a feeling of something suddenly giving way in the thorax, with a sensation of choking. Sudden pain may be felt in the thorax, abdomen, or back, and it may be substernal, epigastric, or, characteristically, girdle in type. The pain is frequently intermittent, resembling colic, and may be accompanied by nausea or faintness. These attacks of pain

may last for a few hours, and relief is usually gradual. Intervals between attacks may be of hours, days, or even weeks. Attacks of pain probably coincide with extension of the dissection or external rupture. Dysphagia may be an early symptom, but vomiting, haemoptysis, and haemorrhage from the bowel are not common. The onset and subsequent attacks of pain are usually accompanied by a varying degree of collapse.

Other symptoms may be produced by involvement of branches of the aorta or pressure by the aneurysm on surrounding structures. Hence cerebral symptoms, disorders of sensation, gastro-intestinal disorders, weakness, or paralysis may all occur (Moosberger, 1924). The pulse may show some irregularity and there may be a difference between the two sides. Absence or irregularity of the pulse on one side may be of temporary duration only. On the whole, little information is to be got from this examination. Similarly the heart rarely gives helpful physical signs. Left ventricular hypertrophy is usually but not invariably present.

In view of the severity of the symptoms, the abdominal signs are not striking. Slight tenderness and guarding, with perhaps some distension, may suggest abdominal disease. If the abdominal aorta is involved then the aneurysm may be palpable, abnormal pulsation may be present, or the clot arising after rupture may give a detectable mass.

Diagnosis.—The picture is so variable that there are only a few common points which could be labelled as diagnostic criteria: (1) A sudden onset is invariable and usually occurs during conditions which could cause a temporary rise in the systolic blood pressure; (2) the pain is often intermittent, disappearing gradually; (3) abdominal pains are usually epigastric, radiating through to the back, or of the girdle type; (4) symptoms and signs may shift downwards in recurrent attacks; (5) there may be a palpable aneurysm or clot or abnormal pulsation; (6) there may be associated neurological or cerebral symptoms; and (7) thoracic symptoms may be anomalous—e.g., anginal with no history of previous attacks, or resembling those of a coronary thrombosis with a persistently high blood pressure.

Case 1

A man aged 69 was admitted on Feb. 20, 1944. During a fit of coughing on the day before admission he had a sudden attack of pain in the lower abdomen, left groin, and back, associated with nausea, faintness, and numbness of the left leg. A left inguinal hernia, previously reducible, came down and he could not reduce it. The pain was severe at its onset but had since eased considerably. He had not vomited.

The patient was a well-built man and appeared moderately shocked. The temperature was 97° F. (36.1° C.), pulse 85, respirations 25. The heart was enlarged to the left. The blood pressure was 110/60. The hernia was irreducible but did not appear to be the cause of his symptoms. The upper abdominal aorta was markedly enlarged, and there was slight tenderness to the left of the umbilicus. No definite mass could be felt. No neurological signs were elicited. Leaking dissecting aneurysm of the abdominal aorta was diagnosed. His general condition slowly deteriorated. Three days later his scrotum was discoloured, and a vague mass could be felt in the left half of the abdomen extending into the left loin. He died next day.

Post-mortem examination disclosed a dissecting aneurysm involving the whole of the abdominal aorta, with rupture into the peritoneum and hernial sac and into the retroperitoneal tissues. The coronary arteries and aorta showed marked atheroma, and the heart left ventricular hypertrophy.

Case 2

A woman aged 48 was admitted on Nov. 9, 1945. She had a sudden onset of pain two days before admission while putting on her coat. It was in the left subcostal region and radiated

through to the back, and was stabbing in character. Next day she vomited several times.

The patient was a well-built woman, rather collapsed. The temperature was 100° F. (37.8° C.), pulse 80, respirations 20. The heart was enlarged to the left. The blood pressure was 145/100 and later increased to 244/100. There was tenderness and guarding in the left subcostal region. Albumin was present in the urine. No definite diagnosis was made. The pain gradually diminished, but three days after admission it recurred over the left chest posteriorly, and three days later this spread to the left lumbar region. The blood pressure was now 190/120. Her condition began to deteriorate, and nine days after admission she was semicomatose. She could just be roused, and complained only of dimness of vision. A pericardial friction rub now became audible and persisted for ten days, while her general condition did not alter much. Radiographs of her chest first showed any change 17 days after admission, when both bases were obscured. Thirty days after admission she became pyrexial and showed signs of congestive cardiac failure, and she died six days later. Numerous investigations were done, with no results worth reporting.

Post-mortem examination showed a fibrinous pericarditis with a hypertrophied heart. The aorta was grossly atheromatous and a dissecting aneurysm started in the transverse aorta and re-entered the vessel 8 cm. above the bifurcation. At the latter point there was a large thrombus in the inferior vena cava. The lungs were oedematous and the liver showed nutmeg changes.

Case 3

A man aged 65 was admitted on Jan. 31, 1946. Two hours before admission, while hurrying to work, he had a sudden onset of severe pain across the upper abdomen, and collapsed in the street. The pain persisted, with occasional acute exacerbations, and radiated through to the back. He had nausea but did not vomit. He was a well-built man showing signs of collapse. The temperature was 97° F. (36.1° C.), pulse 66, respirations 22. The lungs were normal. The heart was enlarged to the left. The blood pressure was 200/140. There was tenderness in the epigastrium and left hypochondrium with slight guarding. His symptoms diminished over the next two days, but then he began to get further severe attacks, mostly at night, lasting about two hours each. These were felt mainly in the epigastrium and radiated through to the back, and made him very restless. By the fifth day after admission his abdomen became rather distended, and, as his bowels had not been opened, he was given two enemata. No result was obtained, and a diagnosis of large-bowel obstruction was considered. However, a further enema produced a good result. The next day the case was thoroughly reviewed. The maximum abdominal tenderness was just to the left of the umbilicus, and for the first time abnormal pulsation could be felt at this point. The blood pressure was 200/125 in both arms, and there were no chest or neurological signs. His general condition was good.

The diagnosis of dissecting aortic aneurysm was then made on the following grounds: (1) sudden onset of pain during exertion; (2) site of the pain and its radiation through to the back; (3) signs of collapse on admission; (4) pulse rate (66) and blood pressure (200/140), excluding a coronary lesion; (5) the difficulty in diagnosing any abdominal disease; (6) the detection of abnormal pulsation to the left of the umbilicus; (7) the shifting downwards of the tenderness; and (8) the intermittency of the attacks of pain and their gradual disappearance. The patient later continued to have severe attacks of pain, partly controlled by morphine, and he died suddenly during an attack nine days after admission.

Post-mortem examination showed a dissecting aneurysm starting in a transverse slit 2 cm. long in the posterior surface of the upper part of the descending thoracic aorta and extending to the bifurcation. There was moderate atheroma of the aorta and coronary arteries. A large clot of blood (1,500 g.) filled the posterior mediastinum and extended behind the left pleura.

Comments

In Cases 1 and 3 the diagnosis could be made without much difficulty. The symptoms remained such that had a correct diagnosis not been made persistent search

for a surgical abdominal lesion might have resulted in a laparotomy. As it was, the prognosis given to the patients' relatives was rather more than guarded. Case 2 was obviously not a surgical case a week after admission. Being wise after the event, it seems strange that this case was not diagnosed, and reference to the case histories of other patients admitted to medical wards with the same condition suggests that correct diagnosis was not impossible.

Summary

Patients with aortic dissecting aneurysms are sometimes admitted into surgical wards.

A brief summary is given of the pathology, symptoms, and signs of this condition.

Three case histories are given, in two of which a correct antemortem diagnosis was made.

It is suggested that a correct diagnosis could be made more often.

Free reference has been made to the excellent symposium on the subject by Shennan (1934).

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LIQUOR PICIS CARBONIS (B.P.)

A CARCINOGENIC AGENT

BY

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From our knowledge of occupational tumours in man and from results of animal experiments, coal-tar must be considered among the most potent carcinogens for skin epithelium. Possible dangers arising from its incorporation in therapeutic preparations for dermatological use cannot, therefore, be ignored.

In the early studies of experimental carcinogenesis several investigators (Sternberg, 1923; Lipschütz, 1924; Berghoff, 1928) examined a number of tar-containing therapeutic preparations in use on the Continent and found these to be carcinogenic for mouse's skin. The preparations tested were carbeneol (a solution of coal-tar in carbon tetrachloride), lithanthrol (a solution in ethyl chloride and ethanol), and carboterpin (a solution in a mixture of terpenes).

The corresponding preparation in use in this country is liquor picis carbonis (B.P.), which consists of a 20% solution of coal-tar in ethanol. In view of its wide use in dermatological practice an experimental investigation of its carcinogenic properties was thought desirable. (This was suggested by Dr. J. R. Squire, of the M.R.C. Industrial Medicine Research Unit, Birmingham Accident Hospital, and by Dr. E. H. Capel, late medical officer to Joseph Lucas Ltd., Birmingham.)

Carcinogenicity Tests on Mouse's Skin

Twelve white mice were painted twice weekly for 41 weeks with undiluted liquor picis carbonis (B.P.) on a small area of skin in the interscapular region. Papillomas appeared in the treated areas of skin in seven out of the 12 mice after the following intervals (counted from the beginning of applications): 10, 17, 18½, 25, 25½, 26, and 40 weeks, respectively. Thus the 50% tumour yield was

reached in 26 weeks, representing a carcinogenic potency (Berenblum, 1945a) of Grade VII. This potency is comparable to that of cholanthrene, and is higher than that of 1:2:5:6-dibenzanthracene.

Of the seven mice with tumours, four subsequently developed malignant growths, which were found histologically to be all squamous carcinomas with atypical growth and local invasion. There were no metastases.

Benzpyrene Content

Although 3:4-benzpyrene—the potent carcinogen originally isolated from tar (Cook, Hewett, and Hieger, 1933)—is not the only carcinogen present in tar (Berenblum and Schoental, 1947), the fact that it can be identified with ease by fluorescence spectrography (Hieger, 1930) and its concentration in complex mixtures readily estimated (Berenblum and Schoental, 1943) made it desirable to determine the benzpyrene content of liquor picis carbonis.

Using the method of estimation of Berenblum and Schoental (1943), the preparation was found to contain 0.02% of benzpyrene, thus representing a 0.1% concentration in the tar itself (since the pharmaceutical preparation in question is a 20% solution of tar in ethanol). This value of 0.1% is much lower than that found in many of the carcinogenic tars previously tested (Berenblum, 1945b). It would seem, therefore, that benzpyrene accounts for only a small part of the high carcinogenic potency of the preparation observed in the biological tests.

Discussion

The observation that liquor picis carbonis (B.P.) possesses a pronounced carcinogenic action on mouse's skin accords well with the earlier tests on tar-containing pharmaceutical preparations in use in dermatological practice on the Continent (Sternberg, 1923, etc.). This raises the important question whether its clinical use is not without danger to the patient.

The crux of the problem is no doubt the length of time the patient is exposed to such potentially carcinogenic action. It may well be that no significant danger is associated with its use in short-term treatments. On the other hand, in the case of chronic skin diseases of various types, for which applications of liquor picis carbonis are often continued for many years, the possibility of a late carcinogenic effect may be a real one. Probably the most serious hazard may arise from its continued use by the patient without medical supervision, to alleviate, for instance, some of the recurrent symptoms of occupational dermatitis in industry.

The true hazard, however, can be assessed only by a clinical follow-up of all patients submitted to this form of treatment. In the meantime, avoidance of long-continued application of liquor picis carbonis would be a wise precaution.

Summary

Liquor picis carbonis (B.P.), as used in dermatological practice, has been found to possess carcinogenic activity when painted on mouse's skin.

The clinical implications of this finding are discussed.

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