in Russia. He was employed as an egg-tester at the London docks, and two weeks before the onset of his illness had been dealing with a cargo of eggs arriving by ship from Poland—a journey which took seven days. He was quite definite that he had never had any louse infestation, but did admit to being bitten frequently by fleas while at work. The Ministry of Health intended to carry out a rickettsial survey of the rats in the docks, but could find no rats in that area.

Comment

The fact that the patient was a Russian-born Jew with no louse or flea infestation was suggestive of Brill's disease, which occurs sporadically along the North-east American seaboard amongst immigrants born in Eastern Europe. In these cases no louse or flea infestation could be found despite an illness characteristic of typhus fever. They were thought to be examples of murine typhus, but Zinsser (1934) after prolonged epidemiological and clinical studies considered them to be recrudescences of louse-borne typhus fever acquired at an earlier time of life in endemic typhus areas of Eastern Europe. Plotz (1943) showed by complement-fixation tests that these cases were serologically identical with louse-borne typhus. It is surprising that similar cases have not been recorded in this country despite a steady influx of Eastern Europeans since the first world war.

The present case, however, was subsequently shown by agglutination tests to be of the murine (flea-borne) type. This is normally enzootic in rats and can be transmitted to man by the flea vector. Brigham (1943) has brought forward evidence suggesting that mice may also act as carriers. If this does occur it must be uncommon, as other workers have on many occasions been unable to demonstrate mice infection in areas of murine typhus where rats were infected. No examination of mice in the docks was made in this case.

As there was no rat infestation in that area of the docks, and as the disease is endemic in Poland, it seems reasonable to assume that the source of infection was the Polish ship. The egg-packing cases may possibly have been flea-contaminated either before loading or during transit. None of the patient's fellow workers were infected.

Although the man had a large number of contacts during the incubation period the risk of further human spread was small, as the typhus was of the murine type and flea infestation was apparently transient. No further cases were reported.

My thanks are due to Dr. Norman H. Hill and Dr. H. S. Banks for their help and advice, and to Dr. Janet S. F. Niven for her help with the serological results.

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The Finance Bill now before Parliament exempts certain drugs and medicines from purchase tax. The relevant provisions, which will take effect from June 1, are set out in detail in Notice No. 78M of April, 1948, issued by the Commissioners of Customs and Excise. In general terms and subject to conditions about the containers and their labels the preparations exempted are those which consist of one or more substances described in: (a) any monograph in any edition of the *British Pharmacopoeia*; or (b) any monograph, or the Formulary, in any edition of the *British Pharmaceutical Codex*; or (c) the National (War) Formulary, issued by His Majesty's Stationery Office; or (d) any Formulary approved by the Minister of Health for the purposes of the National Health Service. These substances may be compounded in the ordinary way with excipients, vehicles, bases, or preservatives.

TWO CASES OF TETANUS NEONATORUM

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Tetanus neonatorum is a rare condition in this country and reports of its occurrence are hard to find. While occasional cases are recorded in foreign literature, the latest reported in this country appear to be those of Johnston (1928) and Renton (1918). The occurrence, therefore, of two cases within two months prompted us to put them on record, together with an indication of the possible source of infection in one case.

Case Reports

Case 1.—The patient was a normally delivered male child, born at home under the care of a district midwife. He was admitted on the eighth day with a 24-hours history of difficulty in feeding, apparently due to trismus. On examination he was seen to be extremely rigid, and the examination itself stimulated the onset of spasms of tetanic type. The umbilicus, from which the cord had separated before admission, showed a slight purulent discharge with surrounding inflammatory reaction. Aerobic culture of the pus produced a profuse growth of *Staph. aureus*, but anaerobic culture revealed no *Clostridium tetani* at this stage. The case was diagnosed as tetanus neonatorum, and vigorous antitetanic treatment was started. The infant appeared to improve for two days, but collapsed and died on the third day after admission.

Post-mortem examination showed the picture of death from asphyxia. There was, in addition, evidence of mild inflammatory reaction around the umbilicus, while beneath the umbilical scar was a small bead of thick pus. The Gram-stained films from the pus failed to reveal *Cl. tetani*, but anaerobic culture of the umbilicus and ligamentum teres produced a mixed growth of organisms from which virulent *Cl. tetani* was isolated.

Case 2.—This case occurred about seven weeks after that just described, and affected a male child 9 days old, also born at home. In this case labour had been difficult and there was at first some suspicion that the symptoms were due to birth injury. However, after admission to hospital the clinical symptoms became typical. This child also died on the third day after admission in spite of vigorous treatment. Post-mortem examination revealed essentially the same picture as that seen in Case 1, but *Cl. tetani* was not isolated from the post-mortem material.

Investigation

The occurrence of these two cases, both delivered by different district midwives, led to investigations into the origin of infection. These were carried out by Dr. Ruby Bell, senior assistant medical officer of health in charge of maternity and child welfare, and Prof. D. T. Robinson, Liverpool City bacteriologist, to whom our thanks are due for the information given below.

The instruments, gauze, lint, ligatures, and dressings used by midwives were all cultured, but failed to reveal the presence of *Cl. tetani*. Both mothers, however, had sprinkled their infants' umbilical stumps with baby powder—of a different make in the two cases. These were obtained and cultured. The powder used on Case 2 gave a good growth of virulent *Cl. tetani*, but none of these organisms were isolated from the powder used on Case 1. Accordingly several samples of powder of the same brand as that used by the mother of Case 2 were obtained from various chemists in the city. In addition several other

brands of baby powder were obtained to act as controls. All the samples of powder of the brand used in Case 2 showed the presence of numerous anaerobic organisms, though *Cl. tetani* was not isolated, while the control powders gave no such growth.

The makers of the suspect powder were approached and submitted the various raw materials used in its manufacture. These were: aluminium silicate (kaolin), magnesium silicate, boric acid, and perfume. The last three ingredients proved to be blameless, but from the kaolin an anaerobic spore-bearing bacillus was isolated, which, however, proved to be avirulent on animal inoculation. The use of this kaolin in the manufacture of the powder was discontinued by the manufacturers.

Summary

Two cases of tetanus neonatorum are described. Investigation of the origin of the infection suggests that the dusting powder used in one case may have been the cause. The origin of infection in the other case remains uncertain.

Our thanks are due to Prof. N. B. Capon for permission to publish the case histories; to Prof. W. M. Frazer for permission to use the results of the public health investigations; to Prof. A. W. Downie for carrying out virulence tests on the post-mortem material, and to Prof. Sheehan for advice in preparing these notes.

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Medical Memoranda

Fat Indigestion in a Breast-fed Infant

This case seems worthy of record because the mother had a higher percentage of fat in her breast milk than I can find recorded, and because it demonstrates an uncommon cause of feeding difficulty in the breast-fed infant.

CASE HISTORY

The patient, a female infant aged 3 months, was brought to me with a complaint of vomiting, frequent large motions, and of crying after feeds. The birth weight was 8 lb. 8 oz. (3.85 kg.) and the weight at 3 months 12 lb. 13 oz. (5.81 kg.). The child was fully breast-fed with four-hourly feeds, and the history of vomiting and indigestion dated back to the end of the first month. At that time the vomiting was not troublesome, but it rapidly became quite severe; concurrently the motions became copious and more frequent than normal—up to five a day—but they remained normal in colour and consistency. Crying, with drawing up of the legs after feeds, became troublesome, especially in the latter part of the day, and in view of these findings the difficulty was thought to be due to overfeeding. The time at the breast was therefore cut down, boiled water being given before feeds to diminish the amount of milk sucked. These measures improved the vomiting considerably, the motions became more normal, and the rate of weight increase was diminished; this seemed to confirm the diagnosis of overfeeding.

At 2½ months, however, the vomiting became more severe again, the motions were frequent and green, and for the first time there was some weight loss. At 2½ months large friable curds began to appear in the vomits and in the motions, and a test feed at this time showed no evidence of overfeeding. The possibility of fat indigestion was considered, and this was confirmed by an analysis of a 24-hour specimen of breast milk, which showed a fat content of 7.4%. It was decided to wean the baby, as the mother had been losing weight steadily throughout lactation, and this was thought to be connected with her high fat loss through the milk. She made a point of saying that she took very little fat in her diet, and this corresponds with the finding of other workers that the diet has very little influence on the composition of breast milk.

The baby was weaned on to a modified National dried milk with a low fat percentage initially, and within a week the motions reverted to normal and the vomiting ceased, as did the crying after meals. The baby gained weight normally, and when she was last seen at the age of 8 months she weighed 18 lb. 9 oz. (8.42 kg.) and there had been no further difficulty with feeding.

A rather unusual feature of this case was that, in spite of a gross excess of fat in the breast milk, the indigestion was never severe enough to cause any significant loss of weight.

DISCUSSION

A survey of the composition of human breast milk in 21 cases of feeding difficulty in breast-fed infants was reported by R. C. Jewesbury (1937). He found a variation in the fat content of between 2.9% and 6.7%. The value of 7.4% in the case recorded above is unusually high, being 2.5% more fat than is present in Jersey cows' milk. The high fat value undoubtedly was the cause of the vomiting and curdy motions, as these cleared up completely after the infant was weaned. I would like to make it clear that weaning is not the usual practice in these cases, for they often respond to the giving of a protein preparation immediately before each feed and to being kept at the breast. In only a few cases is weaning necessary, and then as a temporary measure, the infant being fed on expressed breast milk from which the fat has been skimmed. Weaning in the above case was resorted to only because of the excessive loss of weight by the mother, which was thought to be due to the heavy loss of fat through the breast milk.

The method of obtaining the 24-hour specimen of milk is perhaps of importance, because the composition of breast milk is known to vary widely both with the time of day and even with the time during the feed at which the specimen is taken. This specimen was obtained in the following manner: at the 6-a.m., 2-p.m., and 10-p.m. feeds two teaspoonfuls were expressed from the first breast before the feed began and two teaspoonfuls from the second breast after the baby had finished sucking; at the 10-a.m. and 6-p.m. feeds one teaspoonful of the "middle milk" was expressed from each breast. These specimens made up the 24-hour sample, and the fat content of the total amount was estimated.

Finally, it must be emphasized that "the milk disagreeing with the baby" is a very rare cause of difficulty over breast-feeding, and that cases thus labelled, and so often weaned as a result, are most commonly really due to overfeeding or underfeeding.

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A Case of Multiple Embolism with Repeated Embolectomy

Below is recorded a case of repeated embolism in a patient with heart disease, in which embolectomy was performed twice within 14 days, with a successful result.

CASE REPORT

Mrs. J., aged 64, was admitted to St. Helier Hospital, Carshalton, at 12 noon on Nov. 23, 1946, having suddenly lost consciousness while on a trolley-bus with her daughter. At the time of admission she was completely unconscious, with stertorous breathing and generalized flaccidity. At 3 p.m. she regained consciousness and vomited some bilious material. It was then found that she had a past history of rheumatic fever in her teens, and had been taking digitalis at intervals over a long period. She had had occasional "dizzy spells," and at one time had been in bed for six months on account of heart disease.

On examination she was obviously an extremely sick woman, with dyspnoea, cyanosis, and marked oedema of the legs. The heart was enlarged, with signs of mitral and aortic disease. The pulse was irregular and the blood pressure 160/100. The liver was grossly enlarged, pulsating, and tender, and there were crepitations at the bases of both lungs. A diagnosis was made of advanced aortic and mitral disease with congestive failure and a small cerebral embolism.

At 5 p.m. on the same day the patient complained of coldness of the left hand. This was soon succeeded by pain in the whole limb, with definite duskeness of the skin. No arterial pulsation could be detected below the upper part of the left brachial artery, while the whole limb was blue, cold, and painful. The pulse at the right wrist was easily palpable. At this stage I was asked by the house-physician to see the patient. As she appeared to be desperately ill I waited for a couple of hours in the hope of spontaneous improvement in the left arm. After this time the local condition was no better, and an embolectomy was undertaken.

First Operation (Nov. 23).—Under local analgesia the brachial artery was exposed in its upper third. It was found to be pulsating in the whole length of the wound, and the embolus was not palpable. The adventitia was stripped from the artery, and a second incision