A most important lesson we have learnt is that no patient is too ill to have a tube passed. Even seemingly moribund dehydrated cases of pneumonia and meningococcal meningitis have been saved by this method. These patients were so ill that had one not had previous experience of the intragastric drip one would not have dared to pass a tube. Brinton (1941) draws attention to severe dehydration developing during cerebrospinal fever, and mentions the method of giving fluid by means of a nasal catheter, but does not convey to the reader that an intragastric tube is used, and states that an adult should take 2 to 3 pints of fluid every 24 hours. This demonstrates the difference in tropical practice, in which, in the same disease, a fluid intake limited to 3 pints a day would lead to disaster not only from dehydration but commonly in the form of sulphapyridine haematuria. We have in these cases used Ryle's tube with such complete success for the administration of large quantities of fluid, and also sulphapyridine, that to pass a tube in cerebrospinal fever is now our routine procedure.

It was with some trepidation that this method was first employed in acute pulmonary disease, but the need for fluid was so great that it was attempted, the intravenous route being out of the question and the rectal "not satisfyingly certain" (Bailey, 1939). It was not found appreciably to embarrass respiration—rather less so than do many forms of oxygen apparatus in common use. An especial advantage is that hydration proceeds during sleep.

The attitude of our nursing staff, drawn from all parts of the British Commonwealth, has been one of unqualified approval, since it saves much of their time spent in repeatedly requesting the patient to drink. The tube achieves what may only otherwise be done by special day and night sisters under nursing-home conditions.

It is realized that this practice is not as familiar as it should be, and we are certain that an extension of its use and emphasis on the quantity of fluid needed will be found to save the lives of many people whom one would ordinarily expect to die in a few hours.

Our thanks are due to Col. F. R. Cawthorn, I.A.M.C., for the facilities given to us in developing this technique and for permission to publish this article. We also wish to acknowledge the valuable and willing co-operation of many nursing and medical officers.

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SUPRARENAL HAEMORRHAGE REPORT OF A CASE

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Below we report a case of suprarenal haemorrhage diagnosed during life. The clinical data are best presented as day-to-day details.

Case History

The patient was an unmarried woman, aged 23, and before the onset of symptoms was apparently in excellent health. The illness began on a Saturday, during the height of the influenza epidemic last winter, but the patient did not send for her doctor until the following Monday.

Saturday.—Onset of malaise, slight sore throat, short dry cough, and one attack of vomiting.

Sunday.—Main complaint now was of "feeling cold." The throat was still sore, but there was in addition a complaint of pain in the lumbar region. This pain was never severe, and was not referred to the region of the loins. The symptom she stressed especially was the persistent feeling of cold.

Monday.—She called in one of us, and was seen for the first time at 3 p.m. The story of the preceding days was elicited, and in addition she complained of frontal headache, and was found to be menstruating. The menstrual period was to time, but the loss was excessive. The symptoms of the previous day were still present, but were no worse. On examination temperature 100°; pulse 84, with fair volume, regular and apparently normal tension; fauces and pharynx injected, but no gross clinical tonsillitis and no exudate. There was no cervical adenopathy or coryza. The heart, lungs, and abdomen presented no abnormality. There were no signs of meningeal irritation, and no change in the optic fundi or drum-heads. The skin did not show any rash and there was no sweating.

Tuesday.—During the early hours of the morning the patient complained of intense cold and a feeling of profound fatigue. She was seen by C. J. W. again at 6 p.m. The whole picture was now in marked contrast with that of the previous evening. The woman was restless and had an anxious look. She was intensely cyanosed, especially in the face and lips, hands and forearms, feet, and legs up to the knees. The temperature was 96° and there was a profuse cold sweat. The pulse rate was 120, regular, but of poor volume; respirations 30, with frequent sighings. Examination of lungs, heart, and abdomen revealed nothing further. Central nervous system: Mentally clear and co-operative; cranial nerves normal, optic fundi normal, pupils dilated but reacting normally; knee- and ankle-jerks absent; arm-jerks present but weak; plantar response flexor. The arms and legs could be moved only with difficulty. Light touch, pin-prick, heat, and cold were blunted over the extremities, but deep sensation was normal.

At 8 p.m. the same day the woman's condition was obviously worse. The cyanosis was deeper, and there was no pulse at the wrist; she was mentally apathetic but rational, and was still sweating profusely.

At 11 p.m. she was seen in consultation. The main findings were as above: the heart rate was now about 160 or over, and the clinical state was obviously deteriorating rapidly. At this stage a tentative diagnosis of suprarenal haemorrhage was made, and adrenaline, pituitrin, strophanthin, etc., were administered. No cortical extract was immediately available. The patient died three hours later, at 2 a.m. on the Wednesday morning, after an illness lasting about four days.

Post-mortem Examination.—The right adrenal was completely disrupted by haemorrhage, which had burst through the capsule of the gland. The left adrenal showed discrete haemorrhagic areas throughout its substance. The other organs were macroscopically normal. There was no haemorrhage into serous membranes or any splenic enlargement. The necropsy was performed under difficulties, but was reasonably complete.

Discussion

This case presented great diagnostic difficulties. As mentioned previously, it occurred at the height of an influenza epidemic, with fresh cases of influenza being seen hourly, and not unnaturally the diagnosis when first seen was influenza—a diagnosis which may have been correct. But the striking change for the worse which occurred between the first and second visits of C. J. W. obviously called for a further diagnosis. The clinical picture was one of profound circulatory collapse, the cause of which an examination failed to reveal.

The unusually heavy menstrual period suggested the possibility of an abortion, and the question of poisoning by some drug taken to procure abortion was discussed. Hospital investigation was out of the question; the patient lived in a lonely farmhouse, and the weather was so foggy that she could be visited only with the greatest difficulty. At the mid-night consultation it seemed that the only diagnosis which would account for the profound asthenia was acute suprarenal failure. This very tentative diagnosis was confirmed by the necropsy.

The literature of acute suprarenal haemorrhage has become quite extensive, though the number of recorded cases, so far as we have been able to discover, does not exceed about 60: owing to wartime difficulties our search of the literature has not been as complete as we would wish, and we are open to correction on this point. By far the greater number of recorded cases and discussions concern the now well-recognized Waterhouse-Friderichsen syndrome, due in the majority of cases to meningococcal septicaemia, the symptomatology being characterized by sudden onset, malaise, restlessness, often vomiting and diarrhoea, followed by cardiovascular collapse with intense cyanosis, often a striking purpuric eruption, and death within 24 hours. But deviations from the syndrome have been recorded by many writers, and

classifications have been attempted based on the presenting or dominating symptoms. Thus we have the well-recognized "peritoneal" type, simulating the acute abdomen; a "nervous" type, presenting with convulsions and delirium; and a third variety simulating a severe purpura. An "asthenic" type was described by Arnaud as early as 1900, but the original reference was not available, and we know of no case-description, except the one recorded above, which typifies this asthenic group of Arnaud.

Conclusion

The features of the above case which seem to deserve emphasis are: (1) The insidious onset, but ultimately rapid collapse due to apparently causeless circulatory failure. (2) The absence of abdominal pain, which if present would have been of real diagnostic help, and this despite the severe haemorrhage into the right suprarenal; the same applies to the absence of petechiae. (3) It has been suggested that the purpura, when it occurs, is merely a manifestation of severe septicaemia: our case would support this belief. (4) The diagnostic value of the intense cyanosis associated with cardiovascular collapse. The cyanosis is much more striking than in any ordinary variety of acute heart failure, such as that due to a coronary thrombosis. (5) Was the patient really suffering from influenza and, if so, was the influenza responsible for the suprarenal failure? At no time did the case suggest a septicaemic state.

Summary

A case of suprarenal haemorrhage of the so-called "asthenic" type is described; the diagnostic difficulties are discussed. It was possible to suspect the diagnosis during life as the only explanation of the profound cardiovascular collapse.

Medical Memoranda

Acute Appendicitis, treated with Penicillin

I would like to bring forward the following case record to show the dramatic effect of penicillin in what would otherwise have been a hopeless case of acute appendicitis, with perforation, gangrene, and general peritonitis.

CASE HISTORY

A male aged 4 years 11 months was admitted to this hospital on Aug. 16, 1944, at 2.20 p.m. The previous day he had been ill with vomiting, and when seen by his own doctor had shown all the classic signs of acute appendicitis. On admission he had a tender and rigid abdomen, with pain more pronounced in the right iliac fossa. The knees were drawn up, he was restless, and he looked very ill. Temperature 101.8°; pulse 136.

Operation was performed at 3.5 p.m. under open ether—right pararectal incision. The abdomen contained thin greenish foul-smelling fluid, with gas. The appendix was found to be retrocaecal, coiled up on the caecum, with the thickened omentum wrapped over it. The omentum was separated and a small gangrenous portion removed. The appendix was perforated about the middle, and was also gangrenous in this area. The neighbouring bowel was covered with soft greenish fibrin over a wide area. The appendix was removed, the R.I.F. well swabbed out, a drainage-tube inserted, and the wound closed.

A specimen of the fluid in the abdomen was sent to the pathologist at St. John's Hospital, and he reported the presence of *Str. haemolyticus*, staphylococci, and a Gram-negative diplococcus.

Immediately after operation 1.2 c.cm. of nikethamide (coramine) and 1 c.cm. of staphylococcus antitoxin were injected. Sodium sulphapyridine 3 c.cm.—i.e., 1 g.—was injected 4-hourly, also transpulmin 1 c.cm. b.d. The child's condition was very poor: temperature 99°, pulse 164; vomiting brown fluid; very restless, and delirious. 1 c.cm. of camphor in oil was injected during the night. Next day his condition had not improved: temperature 97.8°, pulse 158; delirium, vomiting, and restlessness continued; sedatives had no effect.

At 6.15 on this day treatment with penicillin was begun, and the sulphapyridine was stopped. The method of administration was to run in 15,000 units, in a strength of 2,500 units per c.cm., through a catheter and pass it into the abdomen through the drainage-tube. The catheter was clipped to keep the penicillin within the abdomen. This procedure was repeated every three hours, but before each fresh injection the fluid in the abdomen was withdrawn through the catheter by means of a syringe. Pathological tests were taken of each syringe of fluid so withdrawn. This treatment was carried out as stated every three hours for the next 48 hours, making 14 injections in all and employing 200,000 units of penicillin.

The child made little progress for the first 24 hours, but was quieter, with temperature 98.4° and pulse 136, and the report on the abdominal fluid showed that the growth of streptococci was

inhibited, while the Gram-negative bacilli were still present, and were mostly coliforms.

After the first 24 hours the child began to make a striking recovery. The restlessness, vomiting, and delirium ceased, the temperature was 98.4° and pulse 132, he began to take fluids, and he had a good bowel action. On the third and fourth days after the operation penicillin was employed twice daily, morning and evening, in the form of an irrigation of the abdomen, with 20,000 units in the same strength as before; but it was not now retained in the abdomen, the catheter was not clipped, and a smaller drainage-tube was inserted. A pathological report showed no growth of streptococci.

At the end of the fourth day the drainage-tube was removed; there was no discharge, the wound was clean and healthy, and the child was quite well, taking food by mouth and sleeping normally. His subsequent progress has been uneventful.

COMMENT

The above case shows that the abdominal cavity can be sterilized by repeated aspirations of exudate and replacement with penicillin, and that the toxic condition is thereby relieved. Penicillin eliminated the infection so that the patient's resistance was raised and his general condition improved; this contrasted strikingly with his previous very toxic state, in which subnormal temperature, rapid pulse, vomiting, and delirium were all present, indicating a very poor prognosis.

A total of 200,000 units of penicillin was left in the abdominal cavity in the first 48 hours, and in the subsequent 48 hours 80,000 units were used for irrigation.

I wish to record my great thanks to the American Ambulance Unit of Great Britain who so kindly and promptly sent a supply of penicillin in one of their cars. They must be proud to know that they have saved the life of this child. I would also like to thank the pathologist for his interest and co-operation in carrying out the pathological investigations, and the medical superintendent—Mr. G. Richardson—for helping me to write this report. I am very grateful that I have had this opportunity of treatment with penicillin, for I can now spread the light of this experience in my own country when I return there after the war.

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Agranulocytosis after Use of Thiouracil

The following case is indicative of a complication of thiouracil therapy which seems to occur with rather variable quantities of the drug. In view of the early stage in experience of the complication this record may merit publication.

CASE HISTORY

The patient was a married woman aged 61. In 1907, at the age of 24, she developed a localized enlargement of the left lobe of the thyroid gland with marked toxic symptoms. She underwent an operation for the removal of the left lobe. There were no further symptoms, and she remained entirely fit until three years ago, when mild thyrotoxicosis recurred—sweating, nervousness, and slight tremor being the only symptoms. Owing to an exacerbation of symptoms, and a severe tachycardia having supervened, she was admitted to another hospital in Jan., 1944, for thiouracil therapy.

She was given five 0.2 g. tablets daily for one month, and by the end of that time had lost all her toxic symptoms and felt well. She was kept on a maintenance dose of one 0.2 g. tablet a day, and returned home three weeks later still taking this dose. At the end of March, after about 10 weeks' treatment, she was told to have a white cell count done as an out-patient. She omitted to do this, and still continued to take 0.2 g. of thiouracil daily.

At the beginning of May, after three months and one week's treatment, she had an acute febrile attack with some ulceration of the mouth and sore throat, which were untreated but cleared up entirely within six days. On May 27, having had exactly four months of continuous thiouracil, she had an identical though very much more severe febrile attack, and was admitted on June 3, in an acutely ill state, to St. Bartholomew's Hospital at Hill End.

On admission the following positive findings were recorded: T. 103°, P. 108, R. 24. Restless; skin hot and dry. There was much conjunctivitis of the left eye, with cellulitis spreading in the infra-orbital tissue. There was severe inflammation of the tonsils and fauces; the tonsils almost met in the midline, and spots of purulent exudate covered much of the oral and pharyngeal mucosa. The neck glands were bilaterally enlarged and tender. The thyroid was enlarged by an adenoma of the right lower pole about 3/4 in. in diameter. There were no eye signs and only slight tremor. Several petechiae were present over the chest and arms. The lungs and heart were normal. The spleen was enlarged to one inch below the costal margin; it was slightly tender. The urine had a trace of albumin, but was normal to other ward tests; it was acid, with a sp. gr. of 1010.

The day before admission a white cell count of 1,200 had been recorded; it was mainly lymphocytic, with an occasional degenerate polymorph. 10 c.cm. of pentnucleotide had been given. Shortly after admission a further 10 c.cm. of pentnucleotide was given intramuscularly and a pint of blood, warm from the donor, was rapidly transfused; 500 mg. of ascorbic acid was also given intravenously, and oral glucose and copious fluid were encouraged.

On June 4 the general condition seemed slightly improved; the left eye was frankly purulent. Large doses of ascorbic acid, 500 mg.