synthetic cortical extract (desoxycorticosterone acetate) intramuscularly, and in order to combat toxæmia 30 to 60 c.cm. of meningococcal antitoxin was also given intravenously in the glucose-saline. Several patients whose pulses were imperceptible on admission made complete recoveries on these lines. In all, 56 patients received glucose-saline intravenously, 34 serum intravenously, and 44 cortical extract intramuscularly. It was generally unnecessary to cut down on a vein for intravenous therapy. This new method of treating the acute fulminating septicaemic type of case was first introduced in this hospital early in 1940, and was published (Harries, 1940) in March of that year.

Patients who developed such complications as arthritis or iridocyclitis in convalescence received a second course of chemotherapy. All patients were given glucose freely, and even in the mildest purpuric cases a little common salt was added to the diet. If bromides were given as sedatives the sodium salt was administered rather than the potassium salt. Two patients who had neck retraction of such a degree as to prevent deglutition were successfully treated by the injection of a few cubic centimetres of novocain into the post-cervical muscles (Harries, 1936).

Sulphonamide Reactions.—These in the main were not alarming. Skin eruptions developed in 26 cases, jaundice in 4, marked cyanosis in 14, and transient haematuria in 3. No case developed agranulocytosis. One child, however, died from suppression of urine, probably due to renal damage; but permission for necropsy was not obtained.

No person in attendance contracted the disease. No masks were worn, as I believe the wearing of these predisposes to nasopharyngeal congestion and catarrh, which probably lowers the resistance of the mucous membrane. It is likely that infection of a healthy nasopharynx produces a temporary carrier state, with subsequent immunity. The giving of small prophylactic doses of sulphonamides in suspected cases had no effect on the meningococci except that the organisms appeared to be rendered drugfast, and large doses administered later were then less effective.

Bacteriological Investigations.—Morphological meningococci were found in 465 cases, or 93%. Cultures were obtained in 214 cases; of these 93% belonged to Group 1 and 3.7% to Group 2, while 3.3% were inagglutinable. Clinically, the various strains seemed to be of equal virulence.

Summary

A series of 500 cerebrospinal fever cases is recorded, with a gross mortality rate of 8.6%.

An age-distribution table indicates the most favourable age group as 15 to 25 years, with 104 cases and a case-mortality rate of just under 1%.

A suggested classification of all forms of cerebrospinal fever is given.

A new treatment for the acute fulminating septicaemic type is described.

Of the strains of the meningococci cultured 93% belonged to Group 1.

My thanks are due to Dr. Allison, who confirmed our bacteriological findings and who typed the organisms; to Prof. Duguid and Dr. Boissard for post-mortem examinations; and to Drs. Murphy, T. Thomas, Herapath, Lennox, Evans, and Garfield, quondam resident medical officers at this hospital, for their assistance in the treatment of the cases.

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W. L. Downing (*J. Iowa State med. Soc.*, 1941, 31, 538), who records 11 cases in persons aged from 24 to 67, 4 of which were fatal, states that acute pancreatic necrosis is still an unsolved disease. When the diagnosis is doubtful, early exploration should be performed to avoid overlooking perforated peptic ulcer or other emergencies. If acute pancreatitis is found, and disease of the biliary tract is present, cholecystotomy or choledochotomy, or occasionally cholecystectomy, is indicated. Operation should be avoided in the hyperacute type. If the diagnosis is certain, conservative measures should be used. Early operation is advisable in all patients with acute or chronic cholecystitis to avoid the complication of acute pancreatitis.

THE MANGLED FOREARM TREATMENT IN A SKELETON SPLINT WITH FIXED SKELETAL TRACTION

BY

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In a compound fracture of the forearm, in which the bones are shattered and there are extensive lacerations, a complex problem in immobilization results. Given good fortune, an ordinary plaster may prove very satisfactory; yet one can remember several cases in which removal of a plaster became an urgent necessity to allow further surgical treatment. The result was that redisplacement of the bones took place and the sepsis gained nothing from the loss of immobilization.

I have found the following method very useful in these severe cases. The advantages are that there is no danger of circulatory failure due to a tight plaster and that the wounds

FIG. 1.—Posterior view. Note that the Kirschner wire which transfixes the metacarpal does not interfere with movements of the thumb or pierce any of the extensor tendons.

can be fully inspected without disturbing the immobilization. The wound toilet needs no lengthy description except to emphasize the importance of excising all non-viable muscle and of providing a perfect drainage system if one feels that the wound is still contaminated even after excision.

Method

After the wound toilet is complete a fine Kirschner wire is inserted obliquely across the back of the radial border of the second metacarpal, about an inch proximal to the head of the bone. A second wire is put through the subcutaneous border of the ulna 3 in. distal to the tip of the olecranon. A large stirrup is attached to each of these wires. An assistant now holds the arm suspended by the distal stirrup; the elbow is left at a right-angle. The proximal stirrup is allowed to hang down behind the olecranon. The weight of the arm, so suspended, is enough to produce full length, though alignment and rotations will need to be adjusted.

While the arm is still held suspended the stirrups are connected together by two plaster ropes, each made of three 6-in. cellon bandages. Further adjustment of the fracture may be made while the ropes are drying. These ropes are parallel

FIG. 2.—Lateral view.

with the forearm, about 2 in. from it, and when dry convert the whole structure into a rigid skeleton splint with fixed skeletal traction. The dressing of the wounds is completed with a layer of wool and a bandage which encircles the side bars of the splint. The addition of extra wool anteriorly or posteriorly, combined with firm bandaging, will correct any tendency to a backward or forward bow. Finally a removable anterior plaster cock-up splint may be bandaged on to immobilize the fingers. When the patient returns to the ward the forearm is suspended vertically, with the elbow at a right-angle, and accurately counterbalanced with a weight. This is the best position to allow the swelling to subside, and puts least strain on the splint. Inspection of the wound or further surgical

treatment can be carried out by removing the bandage which holds the dressing, and the arm need not be removed from its suspended position during the process.

Directly all active sepsis has disappeared the wires may be removed and a plaster applied. This can usually be done in two or three weeks. This point needs emphasis, since in the absence of definite indications the disadvantages of skeletal traction, such as wire-track sepsis and delayed union, will outweigh the advantages of this form of immobilization.

I am indebted to Dr. Geoffrey Robinson for his photographs of the splint.

Medical Memoranda

Notes on a Case of Death by Lightning

On Aug. 29, 1942, during a severe thunderstorm about 8.30 p.m., a farmer aged 54 was sheltering under a large bombing aeroplane lying in a grass field. A soldier about 200 yards away saw a "thunderbolt" fall, but did not trouble to investigate as there was no sign of fire afterwards. On the 30th, about 5.45 a.m., the corpse of the farmer was found lying supine under the wing close to the body of the aeroplane. Some camouflage netting, which stretched over the tail of the aeroplane, lay under the corpse. Also under the corpse and under the netting was a cross-piece of metal tubing about six inches long each way.

On the same day about 10.15 a.m. I examined the body, which had been taken to an outhouse near by. Rigor mortis was complete. The clothes, which were damp but not soaking, were removed. The cloth cap had a small hole in it. I could not see charring of the edges of the hole, though I looked carefully. Corresponding to the position of the hole in the cap there was a small hairless spot in the right parietal region looking like an abrasion. The face was congested, especially by the left cheek and left ear, where dark fluid blood oozed out of the pores of the skin. On each buttock over the ischial tuberosity there was a circular area about 1½ in. in diameter looking like a recent superficial burn. I could find no other signs of injury on external examination. The boots he was wearing were heavily shod with iron at heels and toes. His watch was still going. I think perhaps he was squatting or sitting on the ground, and the marks on scalp and buttocks show where the electric current passed.

Two fitters in charge of that particular bomber*searched carefully inside and out, and found no sign of damage to the aeroplane, which is largely composed of metal. The aerial had a wire earthing it to a metal rod in the ground some 6 to 8 feet from where the corpse was found.

I do not know if similar deaths have been recorded. It is evidently not safe to shelter under an aeroplane in a thunderstorm. Perhaps it would have been quite safe inside the aeroplane, which was not damaged. I am a civilian practitioner, and record the case hoping it may be helpful to medical officers in charge of aerodromes.

ALFRED V. DILL, M.D.

Tetanus in the Puerperium

Owing to the extreme rarity of cases of tetanus in the puerperium, it has been thought advisable, and important for statistical purposes, to record the following case.

CASE HISTORY

A strong healthy woman aged 40 was delivered of a healthy child at a farm-holding on Jan. 21, 1942. Apart from difficulty of micturition during the third month, due to an impacted retroverted uterus, which was corrected without difficulty, her pregnancy ran a perfectly normal course. Her labour, too, which was supervised by the district nurse according to arrangement, was accomplished without any trouble, lasting some six hours. There was no tear of the perineum. The puerperium proceeded uneventfully until the tenth day, when the patient complained of a slight "stiffness of the neck." This was regarded by the nurse as a slight attack of fibrositis, but when, next day, the patient complained of stiffness of the jaw muscles and of inability to open her mouth properly or to swallow food and drink, the patient's doctor was sent for. On arrival he found the woman sitting up in bed in evident distress. There was a good deal of pain and stiffness in the neck, and trismus was very pronounced. Speech and swallowing had