STREPTOCOCCAL INVASION OF THE
CEREBRO-SPINAL FLUID.

BY

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The fatality of streptococcal invasions of the cerebro-spinal fluid from septic bone foci is so very great, and treatment is usually so unavailing, that it is worth while to record an instance of proved invasion in which treatment was able to effect a speedy cure.

Pte. C. was transferred to a surgical ward under my care at the — General Hospital, Salonica, on July 23rd, 1917. The

following history was obtained: Six weeks previously there had been an abscess near the anus, clearing up in about three weeks, when the patient began to have pain and stiffness in the neck. These symptoms had steadily increased to the time of examination. There was no antecedent trauma, and no account of personal or family tuberculosis. The temperature and pulse are shown on the chart. The left posterior cervical region was swollen, tense, and hot. Fluctuation could not be made out. The greatest tenderness was just to the left of the ligamentum nuchae in its lower part. The perineum revealed the scar of a boil. Rectal examination showed no induration to suggest tuberculosis. No active focus of infection was found (oral, urinary, nasal, etc.).

Operation.—A muscle-splitting approach was adopted. Beneath the deepest layer was found an abscess under great tension; some 25 c.cm. of thick creamy pus escaped, and at the bottom of the cavity was felt the bare roughened lamina of the fourth cervical vertebra; a probe cautiously introduced was felt to pass completely around it. The release of tension caused considerable oozing. This was arrested by light packing, and the next day Carrel-Dakin treatment was established. (The bone lesion was sterilized in fourteen days and gave no further trouble; slight and temporary stiffness of the neck resulted.) The pus gave on culture streptococci and staphylococci; no tubercle bacilli.

Slightly before and noticeably after operation there was vomiting and retching; the pulse-rate was low for the pyrexia present. The knee-jerks were increased; Kernig's sign was present. The optic discs were normal. On the day following operation (July 24th) urotropin, gr. x, four-hourly, was begun. Lumbar puncture was performed and the fluid shot out at great tension; but it did not appear abnormal to the naked eye. Short streptococci were demonstrated on centrifugalization and grew on culture. Only a few polymorph cells were present. On July 25th puncture was again performed, and 7.5 c.cm. of multivalent antistreptococcal serum were injected after the withdrawal of 15 c.cm. of slightly turbid fluid (in which streptococci were present, but did not grow on culture). Retching persisted and the pulse was still lower. Discs normal. On July 26th, puncture, serum injected; streptococci present. On July 27th, puncture and serum injected. No organisms were seen or grown. A few polymorphs were present to the extent usual after intrathecal serum injections. On the 28th, puncture and serum injected. Fluid sterile. On July 31st the urotropin was discontinued. Discs normal. On August 1st the retching ceased. The pulse rate was 50 to 60 for another seven days. Convalescence was uneventful.

COMMENTS.

1. In the absence of other discoverable focus, the presumption is that the anal boil was responsible for the metastasis.

2. The invasion was at a very early stage. As the organisms had ceased to grow *before* the injection of serum, no claim can be said to be

established by this factor in the treatment, although the effect of the urotropin cannot be disregarded. The case seems to indicate that it takes time and continued invasion to establish firmly an infection (apart from overwhelming virulence), and that there is an infecting period during which surgical treatment of the focus should be of avail, particularly where the spread is, as here, via the lymphatics.

3. Lumbar puncture is the obvious means of determining when this invasion has occurred, and is an invaluable auxiliary in the treatment of the case, as well as an index of its progress.

My thanks are due to Major Colt for permission to publish this case, and to Captain Richards for the examination of the specimens.

INFLUENZA EPIDEMIC IN Q.M.A.A.C.
HOSTEL, EDINBURGH.

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THE total number of beds in the hostel is 500, and, as it is a receiving dépôt hostel, the women in it are of various categories, including (1) the permanent staff, numbering about 40; (2) recruits just drafted in for uniform and training purposes; (3) workers of all categories transferred from camps to be drafted out as required. There is, consequently, an ever-changing population, so that the risks of infection being brought in are the greatest possible.

During the recent outbreak of influenza there have been 115 cases; roughly speaking, 23 per cent. of the inmates have been infected. The first definite case of influenza was reported on September 30th, after which there was a lull of nine days, the second case being reported on October 9th. After this the cases followed in rapid succession.

The most frequent complaints on admission to the sick bay were—cough in 41 cases, sore throat in 21, and headache in 22. In 24 cases there was nothing definite reported except a feeling of general unfitness, but in every case the temperature was above normal—in one case 105°, in two 104°, and in one 103.6° on admission.

The length of the stay in the sick bay varied from three to thirteen days, with an average of five to six. One case

developed slight pneumonia, and was removed to the City Hospital, but her whole stay in sick bay and City Hospital inclusive was only sixteen days.

The temperatures rose in 3 cases to 105°, in 8 to between 104° and 105°, in 21 to between 103° and 104°. In no case, however, was there any delirium or even mental confusion, though there was considerable sleeplessness in several cases. No hypnotics, however, were required.

In studying the temperature charts, two types are distinctly seen: (1) Temperatures which fall steadily to normal, usually on the second, third, or fourth day, and remain normal or subnormal (89, or 78 per cent. of total). (2) Temperatures which fall to normal after a similar interval, and then show a secondary rise and a final fall after three to nine days to normal or subnormal (25, or 22 per cent. of total). The height of the second rise, speaking generally, was not as great as that of the primary, but there were 5 cases between 103° and 104°. The majority rose to between 99° and 100°, but the second rise was of short duration. At the time of the first fall to normal the patients declared themselves perfectly well and were anxious to get out of bed; so much so that, without consideration of the temperature charts, it would have been impossible to say that there was anything wrong. It seems evident that in many private cases patients are allowed out of bed too soon, and that the second rise of temperature, which seems to be almost pathognomonic of the disease, is the time when the serious pneumonic complications have arisen. In every case where the second rise did not fall to normal within thirty-six hours a slight degree of catarrh at one or both lung bases was

A, Operation. B, Urotropin; lumbar puncture (15 c.cm.; streptococci grown). C, Lumbar puncture; 7.5 c.cm. serum injected (streptococci present). D, Lumbar puncture; 10 c.cm. serum injected (streptococci present). E, Lumbar puncture; 10 c.cm. serum injected (sterile). F, Lumbar puncture.