1 gr. (65 mg.) was absorbed, when allowance is made for dilution of the drug throughout much of the tissues of the body considerably less than the detectable amount must have remained in the relatively small specimens analysed. This is particularly so when it is remembered that some must have been excreted and lost before death occurred. Moreover, only part of the specimens analysed was utilized for the cantharidin test, as these had to be divided into several portions in order to test for other irritants.

Grateful acknowledgment is made to Dr. R. T. Gaunt for access to the clinical details of this case.

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Recovery from Acute *Clostridium Welchii* Meningitis

We have been unable to find in the literature a case comparable to the one described here. Cairns *et al.* (1947), discussing clostridial infections in wartime brain wounds, mentioned four cases which showed the organism in the cerebrospinal fluid; but none of these resembled ours; in which a fulminating meningitis, due to *Cl. welchii* alone, developed within a few hours of a penetrating wound of the orbital roof.

CASE REPORT

At about 4.30 p.m. on July 14, 1953, a boy aged 2 fell in the garden under unknown circumstances, wounding his right upper eyelid. There was little if any loss of consciousness. He was taken to hospital, where he vomited and was noticed to be drowsy. He was admitted after the small puncture wound had been sutured. A few hours later, during the night, his pulse rose to 150 and his temperature to 102.5° F. (39.2° C.), and there was a little neck stiffness. Systemic penicillin was started, but he continued to vomit, and the following morning his pulse was 160 and he was more drowsy.

On July 15 he was transferred to the Radcliffe Infirmary, where on admission he could be roused to answer simple questions. His right eye was closed and there was a sutured laceration and a haematoma of the upper lid. His neck was very stiff and Kernig's sign was positive. Radiographs showed a small defect in the medial part of the right orbital roof with small bone fragments around it.

A lumbar puncture done twenty-six and a half hours after injury gave purulent fluid which contained 15,000 white cells per c.mm., nearly all polymorphonuclear leucocytes, and yielded a pure growth of *Cl. welchii*, sensitive to 1.5 units of penicillin per ml. Penicillin, 10,000 units, was promptly given intrathecally, this being continued twice daily for four days, by which time it was clear that the infection was coming under control, the total white-cell count in the cerebrospinal fluid having fallen to 440 per c.mm. fifty-two hours after injury. Thereafter he received 10,000 units intrathecally daily for a further nine days. In addition, the child was given antisera as follows: *Cl. tetani*, 1,500 (1950) units; *Cl. welchii*, 10,000 units; *Cl. septicum*, 5,000 units; and *Cl. oedematiens*, 10,000 units. Penicillin, 500,000 units, was given intramuscularly two-hourly for three days, four-hourly for the next seventeen days, eight-hourly for a further week, and twice daily for another ten days. He also had oral sulphadiazine, 0.5 g. four-hourly, for three weeks.

Our reluctance to curtail treatment was due both to the unknown course of such a rare infection and to the presence of a wound which had had no débridement and which

soon broke down and discharged, but finally healed spontaneously after a month. We had felt it unwise to disturb the wound during the stage of acute meningitis. In the early stages further radiographs of the skull and orbit showed no evidence of gas, and a later film of the orbit showed no osteitis. The pus from the wound grew only *Bacterium coli*.

After the first specimen of cerebrospinal fluid, *Cl. welchii* was not grown again and the fluid remained sterile, with the exception of one subsequent specimen which grew yeasts and *Staphylococcus aureus*, both of which were thought to be contaminants.

Clinical improvement was rapid and the child started to walk about his cot a week after injury. His temperature, apart from an occasional spike, remained normal after the fourth day. His cerebrospinal fluid on August 18 (three weeks after starting intrathecal penicillin) contained 60 mg. of protein per 100 ml. and 5 lymphocytes per c.mm. A pneumoencephalogram on August 21 showed only moderate enlargement of the frontal horn of the right ventricle. He was last seen on September 3 (two months after injury), when he was very well.

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Cerebral Thrombosis Complicating Abortus Fever

Although neurological complications of undulant fever are numerous and well recognized (Nelson-Jones, 1951), we are informed by Sir Weldon Dalrymple-Champneys that in his series of over 1,200 cases there is no record of the occurrence of cerebral thrombosis. The following two cases are therefore worthy of being placed on record.

CASE 1

A male designer aged 34 was admitted to the Royal Infirmary, Leicester, on August 23, 1950, as a case of pyrexia of unknown origin. Fourteen days before admission he had returned from Corsica, where he had drunk raw milk, the source of which was uncertain. On August 19 he had noticed general malaise and had had a slight headache which lasted only a few hours. The next day he developed anorexia and bouts of profuse sweating but no rigors. These symptoms persisted and he was admitted to hospital.

On admission his temperature was 100° F. (37.8° C.), pulse 110, and respirations 18. He was sweating profusely and there was a faint pale-pink macular rash on the trunk. He seemed to be very slightly disorientated. The liver and spleen were not palpable, the blood pressure was 135/90, and the rest of the physical examination, including the C.N.S., was normal. The urine was normal. White cell count, 9,200 per c.mm. (polymorphs 60%, lymphocytes 33%, monocytes 7%). The agglutination for *Br. abortus* was positive at a dilution of 1 in 640 (repeated). He was given chloramphenicol, 1.25 g. hourly, for three hours, followed by 250 mg. three-hourly for seven days. His temperature became normal 12 hours after the beginning of treatment and remained so.

On August 27 he complained of weakness of the right arm. On examination there was slurring of speech and a right hemiparesis without sensory change. The cerebrospinal fluid contained 23 white cells per c.mm. (50% lymphocytes); total protein, 250 mg. per 100 ml.; sugar, 71 mg. per 100 ml. Colloidal gold, 2233432100; Wassermann reaction doubtful. The hemiparesis gradually improved until on September 12 the movements and the power were normal, although he still walked with a limp. He subsequently made a complete recovery.

CASE 2

A male petrol-pump fitter aged 42 was taken ill on December 16, 1952, with a bout of profuse sweating. He stayed in bed and the sweating recurred every night. Lassitude and aching of the limbs appeared on December 20. These symptoms continued with an evening temperature up to 101° F. (38.3° C.) for four weeks. He had never been abroad and had suffered from frontal headaches since the summer of 1952. These headaches started a few weeks after beginning his present job; they would come on during the afternoon and pass off in the evening after a short rest. Physical examination throughout this period was completely negative apart from the pyrexia. On January 19, 1953, serum taken for agglutinations was returned positive for *Br. abortus* 1/2,000+. Treatment with chlortetracycline ("aureomycin") 0.5 g. six-hourly was started on January 21, being continued for 10 days. His temperature became normal on the 26th and remained so. Lassitude and limb pains also disappeared.

On February 3, while drinking a pint of beer, his speech became slurred, his left hand useless, and the left leg weak. He also developed a severe right frontal headache. On examination the next morning he was fully conscious; speech was slurred, his left leg was weak, his left arm was completely paralysed, and the left side of his face was also paralysed (the brow being less affected than the cheek). Sensation of the face was normal, the left arm was completely anaesthetic, and sensation in the left leg was diminished. The ocular fundi were normal, there being no papilloedema or retinal arteriosclerosis. The visual fields were full. Tendon reflexes were increased on the left side, the abdominal reflexes were absent on the left side, the left plantar response was equivocal, and the right was flexor. There was emotional lability. The blood pressure was 130/90 and the rest of the physical examination was negative.

By February 11 the motor weakness had almost disappeared, but numbness of the hand and arm persisted. This had gone by February 18, but temperature sensation in the hand was still impaired on March 7 and the hand was clumsy.

This man was right-handed. For about seven years he had been in the habit of drinking the cream from raw milk with his breakfast cereal every morning.

His blood Wassermann reaction on February 10 was negative and the white-cell count 7,900 per c.mm. (polymorphs 65%, eosinophils 1%, monocytes 3%). *Br. abortus* was isolated by guinea-pig inoculation from the milk of 11 of the 30 cows in the herd from which the patient obtained his milk, and by direct culture from six cows.

COMMENT

Hemiplegia, with or without sensory change, is recorded by Huddleson (1939) and Nelson-Jones (1951) as due to the encephalitis which may be caused by brucellosis. But when due to this cause it is usually very transient and may be recurrent with exacerbations of pyrexia, or it may be a terminal phenomenon. In our cases the hemiplegia occurred as a single incident, lasted for about 18 and 15 days respectively, and was not accompanied by a rise of temperature. The clinical course was similar to that of cerebral thrombosis from other causes. It would therefore appear reasonable to assume that in the two cases described here it was thrombotic in origin, though, of course, indisputable necropsy proof is not available.

We wish to thank Dr. S. E. Tanner for permission to use his case and Sir Weldon Dalrymple-Champneys for his encouragement to publish this report.

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Hyaluronidase in Treatment of Sequela of Paraphimosis

Ratcliff (1954) has described the successful treatment of four cases of paraphimosis by injecting hyaluronidase into the oedematous ring of the prepuce. In each case the swelling had disappeared completely within twelve minutes and the prepuce was easily and painlessly drawn forwards. Two cases of paraphimosis were recently treated in the department of venereology, Doncaster Royal Infirmary, and in each case, after the acute phase had passed off, an indurated apron-like fold of prepuce, situated ventrally, persisted. A circumcision was envisaged in order to remove the indurated mass. In view of Ratcliff's findings it was decided to investigate the effect of injecting hyaluronidase locally before resorting to surgical measures.

CASE 1

A single miner aged 22 attended the department of venereology on June 10, 1954, complaining of swelling of the foreskin of seven days' duration following intercourse four days previously. On examination he was found to be suffering from an acute balanoposthitis and paraphimosis. In view of the risk of gangrene he was admitted to hospital. Dark-ground examination, the Wassermann reaction, and the Kahn test were negative. Saline soaks were applied, and "sulphatriad," 1 g. four times daily for five days, was prescribed. Seven days later the inflammatory condition had subsided, leaving an indurated non-tender apron-like mass of prepuce about 1½ in. (3.8 cm.) in diameter situated ventrally. Eleven days later he was discharged from hospital and instructed to attend as an out-patient.

When he attended seven days later the mass of prepuce was unchanged. A circumcision was contemplated in order to remove this persistent indurated mass. The patient returned to work and was requested to attend the clinic in four weeks' time. At the end of this time the indurated mass of prepuce remained unchanged. Hyaluronidase ("hyalase"), 1,000 units dissolved in 1 ml. of sterile normal saline, was injected into each side of the mass and massaged well in. Within fifteen minutes the swelling was less indurated and somewhat smaller. The following day he went away on his annual holiday. Twelve days later the apron-like swelling appeared to be unchanged. Hyaluronidase, 1,000 units in 1 ml. of sterile normal saline, was injected locally. Four days later the mass was reduced in size and there was still some induration in its centre. Hyaluronidase, 2,000 units in 2 ml. of sterile normal saline, was injected locally. Six days later the apron-like mass had disappeared.

CASE 2

A single miner aged 51 attended the department of venereology on July 12, 1954, complaining of swelling of the foreskin of eight days' duration following intercourse ten days previously. On examination he was found to be suffering from a moderate degree of paraphimosis. Wassermann and Kahn reactions were negative and his urine contained no reducing substance. Saline soaks were applied. Within three days there was a very marked improvement, and four days later the inflammatory condition had subsided, leaving an indurated apron-like fold of prepuce about 1 in. (2.5 cm.) in diameter, situated ventrally. Seven days later the indurated mass was unchanged. Hyaluronidase, 1,000 units, dissolved in 1 ml. of sterile normal saline, was injected into each side of the apron-like mass. Within ten minutes the swelling was somewhat smaller and the induration was less marked. Three days later the indurated mass was very much smaller. Hyaluronidase, 1,000 units, dissolved in 1 ml. of sterile normal saline, was now injected locally. Seven days later the apron-like mass of prepuce had disappeared.

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