Case No.	Diagnosis.	Age.	Family History.	Duration of Illness before Treatment.	Complement before Treatment.	Complement after Treatment.	Result.
1	Confusional insanity, lactational	37	Insane	2 months	0.07	0.04 0.07 0.05	Became clear in a few days, but remained apathetic.
2	Confusional excitement, dementia praecox	25	?	5 years	0.08	0.05 0.03 0.07	Became quiet after years of excitement. Chronic acne cured.
3	Confusional insanity, puerperal	25	Insane	1 year	0.09	0.01 0.07	Recovered.
4	Confusional insanity, exhaustion	32	Insane	3 months	0.07	0.07 0.03 0.07 0.06 0.06	Recovered.
5	Confusional insanity, puerperal	30	?	4 months	0.07	0.12 0.09 0.07 0.05	Recovered.
6	Confusional insanity, lactational	27	Insane	5 months	0.07	0.09 0.07 0.06 0.06 0.06	Recovered.
7	Confusional insanity, exhaustion	17	Alcoholic	7 months	0.18	0.18 0.34 0.14 0.1	Recovered.
8	Confusional insanity, puerperal	21	Insane	4 months	0.22	0.12 0.14 0.12 0.12 0.09	Recovered.
9	Confusional insanity, exhaustion	21	Alcoholic	6 months	0.08	0.05 0.03 0.03	Recovered.
10	Confusional excitement, post-influenzal	21	? Insane	3 months	0.08	0.05	Recovered.
11	Confusional excitement, exhaustion	19	Negative	3 months	0.09	0.09 0.07	Recovered.
12	Mental defective, congenital syphilitic	24	Alcoholic	24 years	0.05	0.1 0.05 0.07	No change.
13	G.P.I., excitement, confusion	49	Insane and alcoholic	2 years	0.07	0.07 0.05 0.06	Became quieter.
14	Organic brain disease	52	Unknown	? years	0.08	0.08 0.06 0.07 0.35 0.05	No change.
15	G.P.I., excitement	57	Negative	? years	0.4	0.4 0.24 0.4	Became quieter, slept better.*
16	Epileptic, chronic	39	?	37 years	0.09	0.11 0.09 0.06 0.05	No change in fits. Acne cured.

* A persistent blood Wassermann reaction 16+ was reduced to 12+, but reverted to 16+ with fall in complement.

I consider, has been more toxic than organic. The use of relapsing fever (*Spirochaeta duttoni*) is even more dangerous, as its action cannot be controlled. It may set up violent inflammatory processes in the meninges, with coagula in the cerebro-spinal fluid, recovery from which is questionable. Antityphoid or T.A.B. vaccines intravenously give results which are almost as satisfactory as those of malaria. The shock can be controlled, and institutional treatment is not absolutely necessary. The shock influences the leucocytic cell count and the complement estimate. But again, as in all protein therapy in general paralysis, antisyphilitic drugs must be used.

The effects of protein therapy in encephalitis lethargica are only transient. In epilepsy injections of proteins have given varying results. The pathogenesis of the disease is so obscure that it is difficult in many cases to determine whether the condition is psychical, toxic, or organic. Results so far, however, seem to indicate that states of stupor, confusion, and excitement may be ameliorated, but the disease as a whole is uninfluenced.

The same difficulties arise in dementia praecox. In the early untreated cases remissions from stupor and confusion take place, indicating that the psychosis at this stage is probably more toxic than organic. Blume treated 33 schizoid women with neosaprovitin B, a preparation containing living air bacilli, cocci, sarcinae, and dead *coli* vaccine. Of this, 0.001 to 0.003 c.cm. is administered intravenously every two to three days, gradually increasing to 1.5 c.cm. in a course of twelve to fifteen injections. The cases were treated on an average for three and a half months after the onset of the disease, with the following results: cured or improved 57 per cent., temporarily improved 7 per cent., and unaffected 36 per cent. Of 25 untreated cases, 40 per cent. were improved, 44 per cent. were unaffected, and 16 per cent. died.

Videla,⁵ after using many forms of protein, considered that Witte's peptone gave the best results. A 5 per cent. solution is made in sterilized and filtered physiological salt solution. He discovered that the mode of administration gave varying results.

Intramuscular: Doses of 5 c.cm., 10 c.cm., 15 c.cm., and 20 c.cm. can be given into the gluteal muscles at intervals of 72 to 96 hours. The doses are modified according to the severity of the case.

Intravenous: Doses of 1 to 5 c.cm. give uncertain results.

Subcutaneous (abdominal wall): Used mostly in melancholia in doses not exceeding 5 c.cm.; 10 to 15 injections may be given. Anxiety was diminished in some cases.

Intradermal: This method was discontinued owing to the risk of sloughing and ulceration.

Within a short time of treatment the patient tends to become restless. There is some shivering, arterial hypoten-

sion, and rise in temperature. This is usually followed by sweating, bradycardia, and polyuria. The general reaction is over in twenty-four hours, leaving the patient feeling weak and with the desire to lie in bed. Contraindications are cardiac and hepatic diseases.

Over a period of five years Videla claims that out of 218 cases of insanity treated in this way 16 relapsed, 5 eventually recovering with further treatment; 44 are still undergoing treatment, 13 of whom are improving. The remainder were discharged "recovered." He considers that as a non-specific treatment peptone injections have given satisfactory results. He believes that the shock "modifies the colloidal equilibrium of the blood plasma."

Current literature gives little information about the influence of protein shock on complement, but I consider that it is a field which should be explored as the information obtained may be useful as a guide to the patient's reaction when undergoing this form of treatment.

I offer my thanks to Dr. A. M. Dryden, physician superintendent, for his courtesy in giving me permission to carry out the investigation discussed in the first part of this article, and also to Mr. Winkworth, our laboratory assistant.

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DAMAGE TO THE SCIATIC NERVE FROM INTRAMUSCULAR ADMINISTRATION OF QUININE.

BY

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A FEW cases have been reported in which nerve lesions have resulted from the injection of quinine in the vicinity of nerve trunks. The following case, in which the lesion affected the sciatic nerve, illustrates the necessity of avoiding important nerve trunks in administering quinine intramuscularly.

The patient, a male aged 30 years, attended at the out-patient department complaining of pain and weakness in the right leg.

History.

He stated that about three months previously he had attacks of shivering and fever on alternate days, and a doctor, diagnosing

malaria, injected quinine (amount unknown) into his right buttock in the region of the gluteal fold. Immediately the injection was made the patient experienced a sharp, shooting pain running down the sciatic distribution as far as the foot of the same side; the pain lasted only for a second, and was immediately succeeded by a feeling of numbness and heaviness in the limb.

The remainder of the history was difficult to obtain accurately owing to the patient's dull mental condition, but he stated that during the seven days following the injection the affected limb remained free from pain but paralysed; this period of freedom from pain was succeeded by a period with marked pain and tenderness in the limb, especially below the knee, this condition persisting acutely for twenty-five days and then gradually subsiding. The exact distribution of the pain during that period is uncertain. The limb gradually began to regain some of its power, and by the time the patient attended the out-patient department it had recovered sufficiently to enable him to get about unaided. Apart from the above symptoms, his health had been good.

Condition on Admission.

On examination there was marked wasting and flabbiness and weakness of the flexor muscles of the thigh and of the calf muscles of the right lower limb. There was tenderness on pressure over the sciatic nerve below the region of the gluteal fold, this discomfort being most marked in the muscles of the calf. Pain in the sciatic nerve distribution was induced by flexion of the thigh on the abdomen and extension of the knee. Examination of the superficial sensations showed an area of anaesthesia on the outer side of the right leg, extending from midway between the knee and ankle down to and involving the outer border of the foot, all superficial sensations being lost in this region. Some blunting of sensation was detected outside this area of complete anaesthesia. Marked hyperaesthesia, especially to pin-prick, was found in the inner half of the sole of the foot. Deep sensations were normal.

The knee-jerks were present, equal and brisk on both sides; the ankle-jerk was present and brisk on the left side, but absent on the right side. The patient could now walk, but his right leg was still very weak, and he was unable to rise on his toes on the affected side. He was obviously suffering from the effect of the injection of quinine given either into, or in close proximity to, the sciatic nerve.

The irritative effect of quinine given subcutaneously or intramuscularly is well known, the subcutaneous route sometimes leading to obvious sloughing. The intramuscular injection also causes tissue damage and muscle fibre necrosis, but here the damage is deep-seated and so usually only detected on examination of the site of injection post mortem in fatal cases. The danger of tetanus following intramuscular quinine injection is one that must always be kept in mind, the necrosed tissues affording a favourable nidus for any organisms that may gain access along with the quinine.

Recently the occurrence of fixation abscesses at the site of intramuscular quinine hydrochloride injections has been reported by Giglioli¹ in a series of cases of paratyphoid C infections. Of 59 patients with paratyphoid C infection, to whom intramuscular quinine was given, 20 developed abscesses at the site of the injection, containing short and long Gram-negative rods, the organisms apparently gaining access through the blood stream.

In view of the local pain produced by intramuscular injections of quinine, and of the various complications that may possibly result from this method of administration, many authorities consider the intravenous route safer than the intramuscular, and now employ it as a routine in all cases with marked vomiting or with any other symptoms, the presence of which makes it necessary to get the patient rapidly under the influence of the drug. If precautions are taken to use not more than 0.5 gram at a time of a soluble preparation of quinine diluted in not less than 5 c.cm. of water, and to inject this very slowly intravenously, I have never found any ill effects resulting from this method of administration. The action of quinine given by this route is more rapid, and all danger of local ill effects is also thereby avoided.

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¹ Giglioli: *Proc. Roy. Soc. Med.*, vol. xxiii, No. 2, December, 1929, p. 165.

A CASE OF NARCOLEPSY.

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ACCORDING to Gowers the term "narcolepsy" is best applied to a condition in which there is a tendency to fall into a sound sleep for a short time, usually for a few minutes, rarely for an hour or more. It is distinguished from trance by the brevity of the attacks of sleep, by their strong tendency to recur, and by the fact that the patient can be roused.

The patient in this case was a girl, aged 19, who was admitted into the Hull Royal Infirmary under my care. She gradually began to be sleepy when 16 years old. At night she went to sleep naturally, but would waken in two hours, and was afraid of being alone in the dark. She would scream out, being terrified, and then doze off, but would not get a proper sleep. Gradually, however, she became a little better, and slept more naturally, but lately she has grown worse. She now sleeps two to two and a half hours, awakening always in a fright, then dozing off into an unsatisfactory sleep.

She rises at 7 or 8 a.m., falls asleep at her breakfast and at all her meals, and sometimes between her meals. This happens every day. Even when talking to anyone she goes to sleep, loses consciousness, and falls against the table, remaining in this position for two or three minutes until she gradually recovers. When she has finished her meal she does some housework, but if she feels the sleepy feeling coming on she lies down. Two months ago she left her work on account of the sleepiness; she stopped work of her own accord, as she was a good worker, and her employer did not want to lose her.

During the attacks she never bites her tongue, never passes her urine or faeces unconsciously, and she has had no difficulty in eating or drinking. She has fallen a few times and knocked her head without wakening. She often dreams, but has no nightmares. No giddiness is present, but she is slightly deaf. After an attack she seems to be quite fresh and to have benefited from the short sleep. She appears to work up gradually to the next attack. From four to nine attacks may occur in a day. They last on an average from ten to fifteen minutes, but they are getting

longer. Sometimes she turns quite pale during an attack. The number of attacks increases during her periods to about nine a day; also during the week before and the week after; they are longer at this time, but not more severe. Her periods are regular and normal, and last four or five days. She has had no illness except measles when a child.

Examination showed her to be of very good physique. The heart, lungs, abdomen, and urine are normal. Pubic hairs grow as high as the umbilicus. She is mentally intelligent but emotional. The knee-jerks are equally exaggerated; ankle-jerks are present. There is no ankle clonus, but rectus clonus is present on the left side. The pupils are equal, and react to light and accommodation; there is no nystagmus. Abdominal reflexes are present and normal; the plantar reflexes were not elicited. The cranial nerves are normal. There is no hypotonus, no Kernig, no inco-ordination, no anaesthesia or hyperaesthesia, and no flexibilitas cerea. A Wassermann test was negative.

An examination of the patient for worms was negative. Her periods were regular, but these seem to have affected the sleepiness to some extent. Her eyes were examined by an ophthalmic surgeon; her throat, nose, and ears by a throat surgeon; her teeth were good. An x-ray examination of the skull was made and revealed nothing abnormal.

The conditions in which sleepiness occurs are: (1) epilepsy, (2) trance, (3) catalepsy, (4) encephalitis lethargica, (5) sleeping sickness (trypanosomiasis), (6) narcolepsy, (7) katatonic form of dementia praecox.

Differential Diagnosis from the Above Conditions.

In epilepsy (petit mal) unconsciousness lasts only a few seconds, and is almost always followed by headache. A trance lasts for hours, days, or weeks; hysteroid phenomena occur and other manifestations of hysteria. From catalepsy her condition was distinguished by the absence of muscular rigidity. The chief characteristic of catalepsy is the maintenance for hours of some attitude that would very soon fatigue a normal person; the limbs remain as if petrified. In encephalitis lethargica there is diplopia, or a history of it, and very often a moral change, or Parkinsonism may follow, or rigidity and weakness. It was not sleeping sickness due to a trypanosome, because she had never been abroad, and there was no wasting, as is always found in the late periods of that disease. It is more difficult to distinguish her condition from the katatonic form of dementia praecox. During her stay in hospital she had an attack of a hysterical kind, which might be described as approaching a maniacal nature. It was probably nothing more than a hysterical attack; it is well known that in