serious affections of the nervous system are very rare ; but there are records in the literature of such varied neurological sequelae that I would submit the description of two cases where the onset of symptoms appeared to be too closely related to spinal anaesthesia to be entirely unconnected with its administration.

CASE I

Mrs. N. W., a healthy woman aged 38, had a hysterectomy performed for fibroids in August, 1929 ; the tissue was subsequently examined histologically, and there was no evidence of malignancy. Spinal anaesthesia with stovaine was employed.

Four days after the operation, from which she otherwise made an uneventful recovery, she noticed that her right arm was useless and weak, so that she had difficulty in feeding herself ; within the next few days she complained of weakness in both legs and some dimness of vision. These symptoms became more marked, and finally all the limbs were completely paralysed and flaccid. The onset of the complete paralysis was associated with headache and delirium, which persisted for about a fortnight ; she had diplopia and such deficient vision that she was unable to recognize those in the room. There was retention of urine and faeces. Improvement was gradual over a period of months. She recovered the use of the left arm, and although the right remained very weak, some degree of movement was possible at all joints. Vision was restored to such a degree that she was just able to read large print ; and although her right arm showed ataxic movements at the onset of her illness, both inco-ordination and tremor passed away. Both lower limbs remained completely paralysed, but without sensory loss, although paraesthesiae, burning, and a feeling of weight were present in each. The pupils were equal, central, and circular, and reacted both to light and on convergence ; the arm-jerks were present and not exaggerated ; the abdominal reflexes were absent on the right side and very sluggish on the left. There was no spasticity of the lower limbs, but both knee-jerks were exaggerated ; the ankle-jerks were present and equal, and the plantar responses were flexor. Speech was little impaired, while intelligence was unaffected ; no emotional disturbance persisted. There was no diplopia, but nystagmoid movements were noted in the horizontal plane. Retention of urine and faeces has persisted since the onset of the cerebral symptoms and the general paralysis.

The above represents the clinical picture when she was seen by me with Dr. Alexander of Darvel nine months after her operation, and Dr. Alexander informs me that now, some twenty months after the onset of her symptoms, very little further improvement has taken place. She is bed-ridden, with almost complete paralysis of both lower limbs ; the right arm is still weak ; sphincter control has in a small measure been regained. Before the operation she had enjoyed excellent health, was the mother of two healthy children, showed no evidence of syphilis, clinically or serologically, and had never previously experienced even transient nervous symptoms. As in the other patient, there is no history of any familial disease.

CASE II

G. Y., aged 35, had an operation for left inguinal hernia under spinal anaesthesia with stovaine in August, 1929. The wound healed by first intention, and the recovery from a surgical point of view was uneventful.

During the first few days following the operation a change in his speech was noted in that it became thick and deliberate, with occasional mispronunciation of words ; and at the same time the left hand became clumsy, so that he was unable to fasten buttons and carry out fine movements, though there was no objective paralysis. There was no sensory loss, but the arm and leg felt numb ; and, though there was delay in commencing micturition, catheterization was never required. He had slight transitory dimness of vision, but no ophthalmoscopic changes were detected. Later the left leg became weak and stiff, and he dragged it when walking, and with this stiffness there was associated a feeling of heat in the whole limb.

When seen by me six months later he appeared a well-built man with healthy organs. There was no evidence of arterial degeneration, and the blood pressure was within normal limits. Both legs were weak, especially the left, and when walking

the latter limb was stiff and dragged slightly. The deep reflexes were exaggerated in both limbs, especially the left ; ankle and patellar clonus were elicited, and on the left side the plantar response was indefinitely extensor. There was no intention tremor, diplopia, nystagmus, or emotional disturbance, but though Romberg's test was negative he had some difficulty in walking heel-to-toe. There was no sensory loss and no astereognosis.

The left arm showed more weakness than could be accounted for by the fact that he was a right-handed man, and he was definitely clumsy in carrying out fine movements with this hand. There was no obvious muscular atrophy. The abdominal reflexes were very sluggish on the right side and absent on the left.

Lumbar puncture gave a clear fluid under increased pressure ; protein was increased ; sugar was normal ; no organisms were seen ; and there was only one cell per c.mm. The Wassermann reaction was negative in the fluid and also in the blood, while the colloidal gold curve was 0022110000. He has since made slow but continuous improvement.

The only sequel of spinal anaesthesia, apart from headache and paraesthesiae, which I had previously seen was diplopia from paralysis of an ocular muscle ; but meningo-myelitis after anaesthesia has been described by Donovan, Beretervide, and Richniewski,¹ and a degenerative myelitis has been recorded by Nonne and Demure.² Tropho-neurotic disturbances have also been observed ; and Devraigne, Suzor, and Laennec³ had a case where quadriplegia followed anaesthesia. Post-anaesthetic confusional insanity, epileptiform seizures, double optic atrophy, and vitiligo have all been recorded as sequels of spinal anaesthesia.

Considered from the point of view of the nervous systems alone, both cases which I have described could be diagnosed as disseminated sclerosis ; and even with their post-operative onset, I am aware that many would still consign them to that dumping-ground of neurological diagnosis. But from the onset of the symptoms so soon after spinal anaesthesia, which we know can be occasionally followed by the most varied nervous symptoms, I consider that their relationship to the anaesthesia is more than merely fortuitous.

REFERENCES

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- ² Nonne and Demure: *Wien. klin. Woch.*, 1928, xli, 1002.
- ³ Devraigne, Suzor, and Laennec: *Bull. Soc. d'Obstét. et de Gynéc.*, 1927, xvi, 316.

HYOSCINE AMNESIA IN LABOUR, WITH OR WITHOUT CHLOROFORM

A RECORD OF THIRTY-FIVE CASES

BY

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I started using this treatment as a result of reading the article on hyoscine amnesia in labour by Dr. D. R. Jennings in the *British Medical Journal* of November 2nd, 1929. The cases were not selected, except that no patient who was suffering or had suffered from albuminuria was treated.

Van Hoosen's dosage, as quoted by Jennings, was employed, with only slight modification in a few cases—that is, three doses of 1/100 grain of hyoscine hydrobromide hypodermically at half-hourly intervals, and thereafter 1/100 grain every two hours as long as labour lasts.

In twenty-one of the cases chloroform was also given in the second stage. This is the present practice of the Leeds Maternity Hospital, and I think that where birth occurs about the time when the third injection is due it

may ensure a case being a complete instead of only a partial success.

ANALYSIS OF CASES

Of the 35 patients, 24 were primiparae and 11 multiparae, their ages varying between 18 and 40 years. There was one poorly flexed occipito-posterior position, which called for manual rotation and forceps; 6 other patients had low forceps deliveries; 27 cases were normal; 1 was not in labour. The incidence of forceps deliveries is high, but the series is not large enough to generalize on this point. In one case the indication was contracted pelvis.

RESULTS

Five patients had fewer than three injections, and had little or no amnesia; in these cases the treatment was started too late to be effective. One patient had five injections before it was realized that she was not in labour. Of the remaining 29 cases, 19 are classified as excellent results, 3 as good, 3 as doubtful, and 4 as unsatisfactory.

Four Unsatisfactory Cases

In the first two of these the treatment was faultily carried out.

Case 12.—1-para, aged 28. Six injections. After the sixth dose, was seen by a doctor who was unfamiliar with the low delirium commonly present in these cases, became alarmed at it, and stopped the treatment. The baby was born six hours fifty-five minutes after the last dose, and the patient consequently remembered all the last part of the labour.

Case 21.—1-para, aged 23. Five injections. Time from first injection to delivery, eight hours fifteen minutes. Sixth injection was due one hour before delivery, and was forgotten. She remembered some of the later stages and the administration of chloroform, which was given at the end of the second stage.

Case 25.—1-para, aged 34. Four injections. Time from first injection to delivery, three hours ten minutes. Comatose after second injection to the end. No chloroform. Remembered the terminal pains.

Case 30.—1-para, aged 25. Eight injections. A case of primary inertia. Treatment stopped after eleven hours, very little advance having been made in spite of thymophysin 1/2 c.cm. The baby was not born until twenty-four hours forty-five minutes after the last dose.

Three Doubtful Cases

Case 4.—5-para, aged 31. Three injections. Time from first injection to delivery, two hours. No chloroform. Soon after delivery would not believe that the baby was born. Remembered three injections. Later she said she remembered one pain at the birth. Very much pleased with the treatment.

Case 20.—6-para, aged 33. Two injections. Time from first injection to delivery, 55 minutes. No chloroform. Treatment begun too late. One hour after delivery remembered the birth, but one and a half hours later had forgotten it.

Case 24.—8-para, aged 30. Three injections. Time from first injection to delivery, one hour thirty minutes. Terminal chloroform. At first said she remembered the final pain, but later was surprised to hear that the baby was born.

Three Good Cases

These patients had very fair amnesia, and were pleased with the treatment, but there was a memory island in each case; they cannot therefore be classified with the "excellent" results.

Nineteen Excellent Cases

By "excellent" I mean that after one (two cases), or two (fourteen cases), or three (three cases) injections the patient had no recollection whatever of subsequent pains. The only satisfactory judge of the results of this treatment as far as the amnesia is concerned is the patient, and any case not coming under the above definition is omitted from the "excellent" list. It is necessary to have a high standard. Case 25 cited was in coma for the last two and a half hours of labour, but said she remembered the last pains, and so is labelled

unsatisfactory. A typical comment from one of the "excellent" cases, a 2-para who had had a previous unrelieved labour, was: "I never felt any pain at all: it was wonderful." The number of injections received by the "excellent" cases was as follows:

- 3 (10 cases).
- 4 (3 cases).
- 5 (1 case).
- 6 (3 cases).
- 7 (1 case).
- 8, one being only 1/200 grain (1 case).

Of these patients, six received terminal chloroform, according to the present practice of the hospital; seven were anaesthetized for forceps application.

It is interesting to note that in one of the nineteen (Case 22, a 1-para, aged 24) treatment was stopped after the third injection, owing to her extreme violence; the baby was born three and a quarter hours later. In spite of this amnesia was perfect.

Thirty of the patients were confined in the Leeds Maternity Hospital, and five in private houses or nursing homes.

THE BABIES

Our experience corresponded with that of Jennings. All the babies were born alive, and all breathed and cried at once, and gave no subsequent trouble while under our care, except three.

Case 1.—This baby was born with a caul, and was consequently cyanosed. Its colour became pink within a few minutes after clearance of the air passages and a warm bath; subsequent progress was normal. The cyanosis cannot be attributed to hyoscine (three injections).

Case 3.—The baby breathed normally at birth, but both mother and baby were drowsy for several days. The baby required a good deal of coaxing when feeding during this period. This condition may have been due to hyoscine. Both were normal before discharge from hospital (three injections).

Case 4.—The baby had a hare-lip. It was cyanosed at birth, but was quite normal as regards colour, breathing, and crying twenty minutes later, having been immersed in a warm bath.

Much exaggerated adverse comment has been made on the condition of the babies after twilight sleep. Even with the older morphine-hyoscine treatment I have never seen a stillbirth occur without some adequate reason for it apart from the drugs, and when hyoscine is used alone even the occasional oligopnoea (a condition of no serious moment) seen with morphine-hyoscine is not encountered. When one also bears in mind that asphyxia and stillbirth are by no means unknown in normal deliveries, apart from the use of drugs, it is quite unjustifiable to say, when a patient asks for twilight sleep, that it harms the baby.

CONDUCT OF THE CASE AND APPEARANCE OF THE PATIENT

I agree with Jennings that treatment should not be started before regular pains are present. As a rule I have not given the first injection in a primipara before the cervix is three fingers dilated.

I have not come to any conclusion about the maximum safe dose. The highest dose given in this series was 8/100 grain, without ill effect. Greenwood¹ gives details of a case in which he used 1/10 grain safely, with morphine.

I agree also that most patients remember receiving the first two injections. Whether the treatment accelerates labour I am doubtful. The time of the onset of labour and the time of the beginning of the second stage are points which it is almost impossible to determine accurately. However, Case 30, the patient with primary inertia already quoted, was the only one in which labour was not completed within thirteen hours of the first injection. I am therefore reasonably satisfied that hyoscine does not delay labour to any appreciable degree.

A doctor, or a nurse who is familiar with the treatment, should stay with the patient all the time. External stimuli should be excluded as far as possible. If there is a light it should be kept shaded except when urgently required. The attendants must be absolutely quiet, and refrain from disturbing the patient beyond what is necessary. I have not used the memory test on this account. The effect of the injections usually becomes obvious after the second. The patient begins to sleep between pains; she usually lies quiet. When a pain comes she shows that she feels it, and tosses about. She mutters like a delirious person, but as soon as the pain goes she stops, maybe in the middle of a sentence, and falls asleep at once. Some patients become very restless, or attempt to get out of bed. A few lie comatose even during the pains. Coma, great violence, or a slowing down of the pains are indications for prolonging the interval between injections. Undue wakefulness calls for a shortening of the interval. The pupils soon become dilated. In most of our cases the pulse rate rose, in some to over 120. Often it fell again as labour proceeded, and always within a few hours of the birth. The rise may be explained by the restlessness or by the effect on the vagus. The bladder should be carefully watched. The patient soon becomes thirsty, and asks for a drink, especially in the first few hours; this should be given. Some patients cannot see well owing to paralysis of accommodation for

twenty-four hours or so after the birth. It is important not to omit the last injection, even if the child is about to be born; otherwise the worst pains may be remembered, and the whole labour reconstructed by the patient from them. Additional help, as Jennings says, may be required at the time of delivery. The "obstetric helper" is a useful appliance for keeping the patient in position in the later stages. Our experience did not bear out Jennings's observations on the expulsive pains. These were as a rule remarkably strong, and the abdominal muscles certainly played their part.

With practice it should be possible to obtain a much higher percentage of complete successes than has been obtained in this series, and I have no doubt I shall do so. I have dwelt on the less satisfactory cases because, as experience, they are more valuable than those that are perfect. I hope that others will be encouraged to use the treatment; the success, demonstrated by the patient's gratitude, is a great reward for the trouble involved.

I offer my thanks to the other members of the honorary staff of the Leeds Maternity Hospital for permission to use the treatment on their patients; to Mr. A. J. C. Latchmore, who performed most of the forceps deliveries, and was of great assistance in the management of the cases; and to those students of the Leeds School of Medicine who gave their help in compiling the records on which this paper is based.

REFERENCE

¹ Greenwood: *Scopolamine-Morphine Semi-narcosis during Labour*.

PHIMOSIS AND CIRCUMCISION

BY

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Circumcision is an operation performed with great frequency. It is obviously bad surgery to perform any operation without definite indications, and probably no operation, with the possible exception of tonsillectomy, is frequently advised upon more slender grounds than that of circumcision.

The term phimosis implies such a narrowing of the preputial orifice that the foreskin cannot be retracted over the glans. A foreskin which can be easily and completely retracted without effort is very rare indeed. Phimosis may be of several degrees:

1. A pin-hole preputial orifice smaller than the urethral orifice. This is the only degree in which obstruction to the urinary stream is possible. Apart from cicatricial contraction resulting from inflammation (*vide infra*) it is very doubtful whether phimosis ever produces urinary obstruction. It is reasonable to suppose that healthy and distensible skin will allow the rapid dilatation of the orifice by the ordinary stream to the required size.

2. A match-head orifice.

3. A wide preputial orifice with adherent prepuce (crowned glans).

4. Coronal adhesions.

Any of the above conditions may be associated with a long, lax prepuce.

Popular indications for circumcision include restlessness, straining during micturition, and enuresis. Congenital stenosis of the terminal urethra is a condition which should be borne in mind, for in such a case it is of course futile to attend to the phimosis and overlook the urethra. If circumcision has any effect on enuresis it is probably a psychical effect, which would equally result from any operation.

DILATATION AND RETRACTION OF THE PREPUCE

This procedure is safely carried out and is eminently satisfactory in infants. In older children it may be unsatisfactory owing to the undesirability of carrying out manipulations over any period of time.

Technique.—The only instruments required are a fine probe and a pair of Spencer Wells artery forceps (not too blunt). The first step is the complete separation of the prepuce from the glans. The prepuce is grasped between the thumb and fingers of the left hand and retracted as far as possible. The probe is then inserted (care being taken not to enter the urethra) and swept right round the glans. This manipulation also serves to stretch the preputial orifice slightly. If the prepuce cannot now be retracted, the point of the artery forceps is inserted into the orifice and pushed up as far as it will go between the prepuce and the glans. The blades are then gently separated for a few seconds. It will now be possible to retract the prepuce, exposing the urethra and part of the glans. If complete retraction is not possible the artery forceps are inserted again, care being taken not to split the prepuce. In very resistant cases it is well not to attempt complete retraction at one sitting, but to leave it for a week. When the foreskin has been completely retracted the smegma in the trough round the corona is wiped out, the glans smeared with sterile olive oil and the prepuce drawn down. The preliminary separation of the prepuce from the glans is important, as otherwise the point of the forceps will be found merely to carry the orifice inwards without penetrating it. The mother is instructed to retract the foreskin daily as far as possible, *but not to leave it back*. Nevertheless in a few cases paraphimosis will occur. This, as a matter of fact, may serve a very useful purpose if it is not neglected too long. One often finds after paraphimosis that the foreskin is quite lax and retracts easily. The child is seen every week for a few weeks. The foreskin is retracted, and the glans, having been smeared with olive oil, is brought down again. In two or three weeks' time it will be found to retract very easily. As soon as there is no danger of a paraphimosis it can be left back altogether.

INDICATIONS FOR CIRCUMCISION

The indications for performing circumcision may be grouped as follows:

1. Cases that come from a distance and cannot attend regularly, unless the prepuce can be very easily retracted and is unlikely to cause further trouble.

2. Some boys over 12 months old.