exception of the two cases in which they refused any treatment, their response was surprising and gratifying. Their aim was to get the child back to school in the shortest time.

Discussion

It is apparent that the type of infection has considerable prognostic significance, and that the lesions produced by dermatophytes pathogenic to animals are those likely to be cured spontaneously or without great difficulty. It has been indicated that, of the human type of fungi, *M. audouini* is very resistant to treatment and is a common offender in this country, but it must be noted that Livingood and Pillsbury (1941) have shown that even *M. audouini* infections have occasionally been known to heal spontaneously, sometimes before puberty, if left long enough. Much less common, but even more resistant to treatment, are the endothrix trichophyta (e.g., *T. tonsurans*, *T. sabouraudi*). The ectothrix trichophyta (e.g., *T. asteroides*), representing animal infection, while producing more violent local inflammatory reaction, are easily amenable to treatment.

In the United States, Lewis and Hopper (1943) go a stage further in their adherence to conservative methods of treatment. They divide their scalp ringworms into resistant and non-resistant groups of infection. The non-resistant cases are those which respond to local therapeutic measures, and include not only those produced by animal dermatophytes but also those human-type infections which produce, among other symptoms, markedly inflammatory reactions. In the resistant group such simple measures are unlikely to succeed. Nevertheless even here manual epilation under filtered ultra-violet rays, followed by the application of adhesive plaster, has, in their experience, been found adequate treatment for some small patches of tinea tonsurans.

From the preventive aspect attention should be paid to animals which are likely to be infected with ringworm. It may be difficult to get a patient to part with his pet (the Island puppy still lives), but he can be induced to consult a veterinary surgeon, and treatment of the animal instituted. Wooldridge (1934), advocating the use of Wood's light by veterinary surgeons, makes it clear that a careful search is indicated before absolving an animal from a charge of ringworm. He points out that in the cat there may be no loss of hair, and that the small size and general hidden character of the lesion, coupled with the fact that there is little irritation, may result in its being easily overlooked even on close inspection. It would be advantageous if the introduction of kittens, particularly stray ones, into a community of children could be preceded by such an examination. As a further precaution, animals belonging to households containing ringworm should not be sold or allowed their freedom.

Finally, the advantage of cultural methods in diagnosis, which provide the only means of identifying the species of the infecting fungus, must be obvious to all, and they should be used whenever practicable. In the borderline cases, where there is no clinical indication as to the type of infection, it is submitted that the patient should be given the benefit of the doubt and only conservative treatment undertaken. Culture on a larger scale will eventually give valuable information as to the organism predominating in a particular area, and knowledge of this will be a further pointer in diagnosing between animal and human types of infection.

Summary

The position of ringworm infection with animal-type dermatophytes in this country is reviewed.

Well-authenticated cases of the transmission of ringworm from animal to man are described.

An account is given of a recent particular outbreak in which five persons directly and four persons indirectly were infected from a puppy, the association being proved by cultural investigation.

Some 20 subsequent cultures, taken from patients in the same area, are discussed and the type of organism given.

Clinical findings are described.

Treatment of tinea tonsurans is discussed, and stress is laid on the importance and practicability of treating by conservative methods scalp ringworm produced by animal-type fungi.

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NERVE INJURIES IN CHILDREN

BY

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Injuries of the peripheral nerves in children are fortunately rare, but when they do occur they present certain peculiarities so unexpected that it appears worth while to describe two recent cases. Both were injuries of the deep branch of the ulnar nerve due to deep penetrating wounds by glass fragments, in both suture was undertaken after healing of the original wound and the full establishment of degeneration and paralysis, and in both recovery was rapid and complete.

Case I

Mary S., aged 10, was referred to me by Dr. Riddoch with the history that six months previously she had fallen while holding a glass vase. The glass broke and penetrated the palm of the right hand, just below and lateral to the pisiform bone. A small healed scar showed the point of entry. Sensation was normal, but there was complete paralysis of all the muscles of the hand supplied by the deep branch of the ulnar nerve; Froment's sign was present.

Through a curved incision, lateral and distal to the pisiform, the deep structures of the wrist and palm were exposed. The main trunk of the ulnar was first identified and the cutaneous branch seen to be intact. On following the deep branch it was found to be completely divided, ending in a small end-bulb. The distal portion, also with a small bulb, was found with ease, and after removal of the bulbs suture was effected with very fine catgut. Healing was normal, and ten months later recovery of all the small muscles appeared to be complete and the function of the hand normal. At the time of operation the great size of the nerves and the facility of suture were remarked.

Case II

John M., aged 6, was cut by glass in an air raid, a wide deep wound extending across the inner border of the right hand just below the wrist. A large deep scar remained. Sensation was lost in the ulnar area of the hand and there was paralysis of all the small muscles supplied by the ulnar nerve; Froment's sign was present.

It seemed doubtful if in such a small hand suture could be effected, but on exposing the tissues in front of the wrist the ulnar nerve was found to be of almost adult size and quite out of proportion to the other structures. The deep and superficial branches were followed with ease and both were found to be completely divided, ending in bulbs. The distal portions were found without difficulty and suture of each was effected in the usual manner. A year later there was complete recovery both of sensation and of movement, and the function of the hand appeared to be perfectly normal.

Commentary

These two cases give rise to several curious observations. It would appear that the peripheral nerves in a child are out of all proportion to the other structures, and indeed approach adult dimensions. On reflection it is what one would expect on

developmental grounds, since the nerve cells are almost unique in their individual persistence throughout life, but, so far as I am aware, the fact has not been recorded nor its surgical importance appreciated. The discovery of even small nerves among the minute structures of a child's hand is thus easy. Their rapid recovery is to be expected from the superior vitality of a child.

Complete recovery after suture of the ulnar nerve is very unusual, if it ever occurs, but this is due to the fact that it is a mixed nerve, and not, as has been suggested, to the smallness and delicate function of the muscles it supplies. The deep branch is a purely motor nerve, and with it one may reasonably expect complete recovery, as occurs after suture of other purely motor nerves such as the posterior interosseous and in a great degree the musculospiral.

In such small hands the diagnosis of a nerve injury is not easy and Froment's sign is invaluable. The best way to elicit it is to pull on a card with the finger and thumb of both hands. Normally the powerful adductor muscle of the thumb is used and the thumb remains flat, but in ulnar paralysis this muscle is not available and an attempt is made to replace it by using the long flexor. This, however, flexes the terminal joint of the thumb, producing Froment's sign. A sign which can be recognized by the patient himself is of real value, particularly if its disappearance is associated in the infant mind with the hope of financial reward.

It is hoped that these experiences may encourage others to deal with an injury which if untreated has such grave consequences to the patient and which at first sight appears to involve difficulties which one might well regard as insuperable.

SCIATIC "NEURITIS"

BY

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It is now generally accepted that the commonest cause of chronic pain in the distribution of the lumbo-sacral nerve roots is a rupture of a lumbar intervertebral disk, but there has been much discussion during the past few years between the exponents of the "disk" and "neuritis" theories of the causation of lumbo-sacral root pain. For instance, Dandy (1943) believes that, apart from tumours of the cauda equina and bony disease of the spine, sciatic pain is invariably caused by a ruptured disk or a "concealed" disk. Symonds (1943) has stated that "the vision of an inflamed and swollen sciatic nerve, so confidently stated to be the cause of the syndrome in question, has never yet been granted to human eyes." On the other hand, Bankart (1943) has expressed the opinion that "neuritis" is the commonest cause of sciatica. He believes that the neuritis arises from a spread of periarticular inflammation in spinal arthritis to the nerve roots in the intervertebral foramina.

It seems clear, from reading the voluminous literature on the subject, that much of the variation in opinion of different authorities, neurological and orthopaedic, is due to lack of a common definition of the term "sciatica." If the diagnosis of "sciatica" be applied less loosely to cases of posterior crural pain and used only when there is evidence of a lesion of a lumbo-sacral nerve root we believe that a much more accurate clinical classification will be possible. This narrowing of the definition to "lumbo-sacral root pain" is particularly valuable when surgical treatment may be contemplated, and has previously been suggested by Pennybacker (1942).

Since we treated our first cases of ruptured lumbar intervertebral disk in 1938 we have modified our original views on the frequency of this lesion as a cause of chronic lumbo-sacral root pain, but we are in agreement with those who state that it is the commonest cause of the syndrome. In a series of 50

cases, which we have followed up and which were investigated clinically and radiologically by myelography and eventually submitted to operation, the incidence of ruptured disks was 44%. All our cases had signs of a root lesion, but at operation we encountered many conditions other than ruptured disks. The purpose of this article is to report three cases of sciatic "neuritis" in which the lesion was found at operation and was clinically indistinguishable from a ruptured disk before operation.

We have on two occasions found a swollen oedematous nerve root, and once seen adhesions around the root in the spinal canal. In none of these cases was there any evidence of a ruptured or "concealed" disk on careful exploration of the intervertebral space, although this had been the pre-operative diagnosis; neither was there any evidence of spinal arthritis in the apophyseal joints. For obvious reasons we cannot submit any histological evidence of "neuritis," but there was ample visual evidence of oedema of the nerve roots in two of the cases, and in the third the adhesions around the root were easily seen and freed. It would of course be possible to remove a piece of posterior nerve root for histological examination, but we have not thought it advisable to subject our patients to this procedure.

Case I

A miner aged 34. First seen Nov. 14, 1944, complaining of low lumbar backache, which had been present intermittently for twelve months. Says he "twisted his back" five months previously. He had occasional numbness and tingling in the two outer left toes, but definite posterior crural pain did not appear until after a period of physiotherapy. Lumbar pain was increased by sharp movements. Lasègue's sign present in left leg. Left ankle-jerk diminished. Slight objective sensory loss on outer border of left foot when leg was raised. No muscular wasting. No improvement after physiotherapy. Straight skiagrams of lumbar spine showed slight osteoarthritic lipping of adjacent anterior borders of 3rd and 4th lumbar vertebral bodies, but no thinning of the disk spaces or arthritis of the apophyseal joints. Myelography after the injection of 5 c.cm. of "fluid" neohydriol showed a defect of filling of "axillary pouch" of left first sacral nerve root opposite disk between L 5 and S 1. C.S.F.: No cells; protein, 55 mg. per 100 c.cm.; W.R. negative.

Operation.—Jan. 22, 1945. Interlaminar approach on left side between L 5 and S 1. First sacral nerve root found to be thickened to about three times normal size. This was at first thought to be due to a neurofibroma of the root, but on incision of the dural sheath no tumour was found; the root was swollen and oedematous. Further decompression was made by excision of the ligamentum flavum and parts of the laminae adjacent to the opening. The intervertebral disk was explored. No extrusion could be seen; and no softening of the disk was found after incising the posterior longitudinal ligament and inserting a sharp spoon. Most of the iodized oil was removed with a syringe before closure of the wound. The patient had intense sciatic pain after the operation, which subsided gradually in about ten days, but since that time he has had no pain and has returned to full work as a miner. Lasègue's sign and the slight sensory loss had disappeared before his discharge from hospital on Feb. 12.

Case II

A male school-teacher aged 35. First seen March 20, 1945. A year ago had pain in left buttock, and left leg felt "stiff" in mornings. Occasionally had a shooting pain down back of left leg. Pain lasted throughout the summer, but later improved after physiotherapy. About a month before he was seen the pain recurred after a period of complete freedom, but much more severely. He had to be carried into hospital. Pain down back of left leg was increased by coughing and sudden movement. He says that before the onset of the pain a year ago he lifted a heavy sack and felt some strain in his lower back. On examination Lasègue's sign at 30° on left side. Pain also produced in left leg by raising right leg to 60°; left ankle-jerk diminished; scoliosis to left; slight hypo-aesthesia on outer border of left foot and shin; slight tenderness over sciatic nerve in left thigh; no muscular wasting. C.S.F.: 4 lymphocytes per c.mm.; protein, 30 mg. per 100 c.cm.; W.R. negative. Myelography by Dr. Stanley Nowell showed a notched filling defect on left side opposite disk between L 5 and S 1. There was no evidence of thinning of the disk or arthritis of the apophyseal joints.

Operation.—March 28. Left interlaminar approach. No disk extrusion found and no softening of disk on incising posterior longitudinal ligament. Left first sacral nerve root showed definite swelling and oedema. The decompression was enlarged by slight excision of the laminae laterally.

This patient also had severe sciatic pain for a week after the operation and some retention of urine. The pain recurred in attacks for several days and then subsided. He returned home on April 17 and later resumed work, but he is not yet entirely free from pain although