

A CASE OF LARVA MIGRANS

By A. E. MCGAVIN

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On July 31, 1937, a boy 6 years of age was brought to me with an abrasion at the tip of the left elbow, which had been caused about four days previously. Two days previously the parents had noticed a pinkish thread-like streak in the skin extending from the point of the elbow towards the bend of the elbow. This streak advanced in irregular loops and curves and at one place a circle had formed with several turns within it. I had never seen a similar case but it suggested to me the appearance of filariasis of the skin. I looked up the description of creeping eruption described in the textbooks, and found that it is caused by a larva which wanders irregularly within the deeper layers of the skin. It is identified as the larva of a dipterous insect—order Estride, genus *Gastrophilus*. It is a comparatively rare condition in northern districts but quite common in warm climates, especially along the Florida coast of the Gulf of Mexico. One case was reported a few years ago in Manitoba and two in North Dakota. There is a possibility that my case originated in the Gulf of Mexico as the boy's grandmother spent the winter of 1936-37 in Florida and other southern places, and

brought back quite a collection of sea shells. The grandson frequently played with these shells, and may have been infected with the larva from that source when there was an open abrasion on the elbow. It is reported that a number of cases originated while the patients were staying at the sea shore.

The larva may continue to wander about for weeks or months and advances about one to six inches daily in irregular curves, loops, spirals and circles. It may make many concentric circles.

I thought that a strong exposure of the ultra-violet rays would destroy it, so I administered a five-minute exposure at twelve inches. This had no effect. I then applied a moist 1/2,000 bichloride dressing overnight, with no effect. The books on skin diseases recommended injection of a few drops of chloroform into the skin. I injected novocaine in four places about half an inch on each side of the apparent ending of the pinkish streak, and also half an inch in advance and half an inch behind the point. (The larva is sometimes seen with a magnifying glass as a dark speck 1/3 inch in advance of the pinkish raised line). I then injected a few drops of chloroform within this anesthetized area. There was no further evidence of the larva. The skin became necrosed where the chloroform was injected and after a time sloughed. It gradually healed by granulation and closing in of new skin. I assisted the growth of new skin by applying a 1 per cent scarlet-pod ointment.

Therapeutics and Pharmacology

HEPARIN AND THROMBOSIS

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At the annual meeting of the Royal College of Physicians and Surgeons of Canada, held on October 30, 1937, Dr. D. W. G. Murray and the author presented a summary of their recent work on the effect of heparin on thrombus formation. A preliminary account of this investigation appeared in this *Journal*.¹

The anticoagulant heparin was discovered in 1916 by Howell and Holt. When the work on this substance was begun in the Department of Physiology of the University of Toronto (1929) it appeared that two problems had to be solved before its effect on thrombus formation in human subjects could be investigated. It was necessary to secure a pure, non-toxic form of heparin and to prove that the anticoagulant prevented the formation of thrombi in experimental animals. The problem of the purification of heparin was attacked by Dr. Arthur Charles and Dr. D. A. Scott in the Connaught Laboratories. Each new preparation of heparin which they prepared was tested on experimental animals, and later some of the purer ones were administered to a group of human subjects. A detailed report of an extended study of the action of heparin on the formation of thrombi in the veins of dogs after injury was recently made by Murray, Jaques, Perrett and Best.² The authors conclude that

the administration of heparin before and for adequate periods after injury causes a very definite decrease in the incidence of thrombus formation in veins. The injury to the veins was produced in one series of experiments by mechanical means, *i.e.*, crushing, and in another series by the injection of an irritant substance, sodium ricinoleate.

While some of the earlier preparations of partially purified heparin could not safely be administered to human subjects, a solution made from the crystalline barium salt of heparin by Dr. Charles was found to exert no toxic effects. It appeared, therefore, that answers favourable to the exploration of the effect of heparin in the human subject had been obtained in both series of investigations. In other words, a purified, non-toxic preparation of heparin which prevented the formation of thrombi in experimental animals was available.

Quite recently it has been shown by Best, Cowan and MacLean³ that heparin prevents the formation of white thrombi in monkeys, dogs or cats when blood is made to pass through glass or cellophane tubes. With the help of Dr. James Craigie in making the photographs, a moving picture film in colour depicting the formation of white thrombi has been prepared by Mr. C. R. Cowan and the author. This film was shown at the meeting referred to in the opening paragraph.

While post-operative thrombosis in human

1. MURRAY, D. W. G., JAQUES, L. B., PERRETT, T. S. AND BEST, C. H.: Heparin and vascular occlusion, *Canad. M. Ass. J.*, 1936, 35: 621.

2. MURRAY, D. W. G., JAQUES, L. B., PERRETT, T. S. AND BEST, C. H.: Heparin and the thrombosis of veins following injury, *Surgery*, 1937, 2: 163.

3. BEST, C. H., COWAN, C. AND MACLEAN, D. L.: In press.

patients constitutes one of the major complications the incidence is happily not great. It will therefore be necessary to administer heparin in a very large number of cases before anything definite can be said about the effect of this material on the frequency of thrombus formation. Heparin has now been administered in the Department of Surgery of the Toronto General Hospital in some 230 cases. Most of these patients had undergone an extensive abdominal operation.

It is thought that heparin may be useful in various operations on blood vessels. Dr. Murray and his colleagues have found it of advantage in doing end-to-end sutures of blood vessels in experimental animals and in the transfer of organs from one site to another. Dr. Murray feels that it may be possible to prevent the formation of a new thrombus after embolectomy by the use of heparin. Encouraging results have been obtained in the clinic in the treatment of certain types of thrombophlebitis, and it is hoped that more of these cases may be studied in the near future.

A great many new problems have been brought to light by the work recently carried out in this field. An effort is being made in the Department of Surgery to detect the cases in which thrombosis is likely to occur, but adequate tests are not as yet available. Further experimental work is being conducted in an effort to determine the rôle of heparin in blood vessel surgery. In the Connaught Laboratories there are many problems associated with the production of heparin in large amounts in a pure form and at a reasonable price. In the Department of Physiology and in the School of Hygiene experimental studies are being conducted by Dr. D. Y. Solandt and the author on the effect of heparin on coronary thrombosis produced in dogs by experimental means. There are many problems, too, in connection with the physiology of the blood platelets.

The clinical investigation of heparin is warranted, first, because it is established that this can be done safely and, secondly, because the results on experimental animals justify the conclusion that heparin prevents the formation of thrombi. While the therapeutic possibilities of heparin are as yet quite unsettled, an effort is being made to advance knowledge in this field.

THE VALUE OF THE ZINC SULPHATE NASAL SPRAY IN THE PROPHYLAXIS OF POLIOMYELITIS

An outbreak of poliomyelitis which occurred in Toronto during the months of August, September, and October, with an incidence rate of 1.1 per 1,000 population, afforded an oppor-

tunity for a trial of a nasal spray containing 1 per cent zinc sulphate, 1 per cent Pontocaine, and 0.5 per cent sodium chloride. In the spraying, 0.5 to 1 c.c. of solution was introduced into each naris and the spraying was done on two occasions with an interval of approximately 12 days. The spraying was done according to the technique of Peet, Echols and Richter, but differed from their recommended procedure in that it was not administered on three successive days, since it was considered that it would not be practical to do so. The work was done by the attending otolaryngologists, 44 in number, of eight hospitals in the city. Ninety-seven clinics were held. The staff of each clinic consisted of an otolaryngologist, a graduate nurse as assistant, a clerical assistant for recording the spraying, a public health nurse for recording personal data concerning the child, and an undergraduate nurse for taking the child's temperature. In the period of one week from the authorization of the study, 5,233 children had received the first spraying, indicating the success of the presentation to the public and the efficiency of the organization. The second spraying extended from September 13th to September 16th and supplementary clinics were held on September 20th, a total of 89 clinics being held. The work was conducted without the occurrence of any complications, the immediate after-effects seldom giving discomfort for more than twenty-four hours.

A representative control group of 6,300 children was obtained in the city proper. As suitable control groups could not be obtained in the 12 suburban municipalities, 621 children resident in these municipalities who received the two sprayings in the clinics and 158 in private practice were not included in the analysis. Included in the study, however, were 749 children who were sprayed by the same group of otolaryngologists in their private practice and concerning whom satisfactory data were obtained, making a total of 4,713 children resident in Toronto.

Among the 4,713 children who were sprayed, 11 cases of poliomyelitis occurred to October 12th, 30 days from the second spraying. One of these occurred 6 days after the first spraying and was not included in the analysis. In the control group of 6,300 children, 18 cases occurred during the period. The attack rate in the period 7 days after the first spraying to 10 days after the second spraying was 1.7 per 1,000 in the sprayed group and 2.1 in the control group; in the period 7 days after the first spraying to 20 days after the second spraying, 2.1 in the sprayed group and 2.4 in the control group; and in the period 7 days after the first spraying to 30 days after the second spraying, 2.1 in the sprayed group and 2.9 in the control

group. The differences between the attack rates in the sprayed group and the control group were not statistically significant. In the suburban group, which included 621 children sprayed in the clinics and 158 in private practice, no cases were found to have occurred. In the total of the city and suburban groups the attack rates for the period 7 days after the first spraying to 30 days after the second spraying were 2.9 in the control group and 1.8 in the sprayed group. This difference also was found not to be statistically significant.

CONCLUSIONS

1. This study furnishes no evidence of the protective value of a nasal spray containing 1 per cent zinc sulphate, 1 per cent Pontocaine

and 0.5 per cent sodium chloride, when 0.5 to 1 c.c. of the solution was sprayed into each naris on two occasions with an interval of approximately 12 days, the spraying being performed by otolaryngologists with equipment suitable for spraying the olfactory area.

2. As the spraying employing the method used in this study must be conducted by otolaryngologists or other physicians specially trained in intranasal treatment, requires special facilities, and cannot be done sufficiently quickly to meet the emergency of an outbreak, it cannot be considered a practical procedure.—This summary is abstracted from a paper by Tisdall, F. F., Brown, A., Defries, R. D., Ross, M. A. and Sellers, A. H., *Canad. Pub. Health J.*, 1937.—Ed.

Clinical and Laboratory Notes

A TECHNIQUE FOR TREATING FRACTURES OF THE HEAD OF THE FEMUR

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The general rules for the treatment of fractures have always been to obtain anatomical and functional alignment, then fix the joints above and below the fracture line. However, the principles of the technique relating to the head of the femur are in distinct contradiction of these established rules. It follows them as far as the reduction of the fracture goes, but there the similarity ceases. Stability of the fractured parts is obtained by fixation to the well limb without regard to the joints above and below the fracture line.

Formerly at the Jeffery Hale's Hospital we had been using the Whitman spica, and though we obtained fair success with a few cases there were too many failures. In addition, there was the discomfort of the patient and the many difficulties of the after-care, well known to all who have used this and similar spicas. In several cases where the spica had not been sufficiently strengthened about the affected hip, moving the patient during the toilet care caused it to crack and lose its efficiency. It was merely to steady the cast at this point that we first employed a bar of wood fixed to the well leg. In this way it was possible to make a lighter cast about the affected hip and still retain sufficient strength to avoid cracking. During a discussion following the application of one such cast it was suggested that the bar could be used for traction counter-traction as well as just for steadying. This was attempted on the next available case and was so successful that we

have since been employing it. At present we have 7 successes in 7 living patients, all able to walk about unaided by a cane. This is a small series, but each patient has been so comparatively comfortable and the nursing care so much simplified that we venture to publish the technique. In doing so no claim is made as to its originality, but only that it is a useful modification. The simplicity of its application and necessary equipment merits attention. It can, if necessary, be applied in the home, on an ordinary bed or table, the only requirements being a few assistants, a bar of wood and the usual plaster equipment. Thus it can be of use in isolated districts as well as the hospital.

The principles and the steps of the technique can best be shown by a series of simple diagrams. The patient is placed on a Hawley table, and the feet attached to the foot-extension rods. The legs are further supported by an overhead sling applied about the knee joint. This also allows a slight degree of flexion to be made at this joint. The rod against which the pubes rests prevents the descent of the body. In these cases the only sedative employed was morphine.

Fig. 1.—Shows the patient on the Hawley table with the typical shortening and eversion of the affected limb.

Fig. 2.—The pelvis is fixed by extreme abduction of the well limb, just enough tension being applied to this limb to steady it.

Fig. 3.—The fracture is reduced by abduction, traction and internal rotation, with sufficient traction held to maintain the leg in correct position. Before proceeding further, check x-rays are taken to ensure proper reduction.

Fig. 4.—The well leg is swung over (the tension remaining the same) towards the