occurred during treatment. In another instance (not included in the analysis) a pneumothorax patient suffering from repeated small haemoptyses was rapidly saturated, but without effect. Haemorrhage ceased spontaneously a fortnight later, the adhesions were cauterized, and there has been no recurrence of this complication.

Conclusions

Ascorbic acid is of no value in the treatment of pulmonary tuberculosis and its complications, including haemoptysis, for which most benefit might be expected. Saturation with the vitamin neither contributes to recovery nor retards retrogression.

As hypovitaminosis-C is encountered in many infections the state found in this disease must be assumed to be the result of toxæmia, and is therefore non-specific.

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THE DIAGNOSIS OF JOINT INJURIES

BY

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The diagnosis of injuries to joints can be greatly simplified if a few simple rules, based on an understanding of the potential dysfunction caused by trauma, are clearly borne in mind and their application to the physical examination of the injured joint mastered.

Physical Signs

Every injured joint presents well-defined physical signs which point directly to the site and often to the nature of the injury. Injuries of joints fall into two classes—those which involve the interior of the joint and synovial and articular surfaces, and those which involve the ligaments and/or tendons immediately related. In some cases both classes of injury are present independently, while in others they may be complementary: for example, a sprain of the internal lateral ligament is, I am convinced, a condition precedent to displacement of the medial meniscus of the knee-joint. Injuries of the ligaments alone, without injury of the internal joint surfaces, are much commoner than injuries affecting the latter without ligamentous injury. In my opinion, based on an experience of several thousand cases over a period of nine years, there is no such entity as a simple traumatic synovial effusion, it being almost impossible, mechanically speaking, to injure the synovial lining of a joint so long as the fibrous capsule with its ligaments and the articular surfaces remain intact. Careful examination will invariably disclose the extrasynovial injury, and restoration of full function depends upon that diagnosis being made and the injury to the ligamentous structures treated.

Inspection should precede every other examination of an injured joint, and any deviations from normal outline, the presence of swelling and/or discoloration, and the position in which the joint is held should be noted. Very often considerable information will be afforded by this

simple procedure, and data such as the inverted-horse-shoe-shaped swelling around the patella in large effusions of the knee-joint will be obtained.

Determining Class of Injury

The next step is to determine which of the two classes of injury already mentioned is present, or whether the injuries affect both the internal joint surfaces and some or all of the extra-articular ligaments. To this end the passive and active movements of the joint must be studied and the findings assessed in the light of the following two rules, based on the teaching of the late Sir Robert Jones:

Rule I.—When disease or injury involves the interior joint surfaces, synovial or articular, all the movements (passive and active) of the affected joint are limited.

Rule II.—If any single movement (passive or active) normal to a particular joint is completely free the disease or injury present does not involve the interior joint surfaces.

Injury to Ligaments

Whether the injury has been found to involve the interior of the joint or not it next becomes necessary to examine the joint for injury to the ligaments related to it. In order to perform this part of the examination accurately and with the minimum of discomfort to the patient it is necessary first to have a clear conception of the anatomical position of the ligaments in question and to examine each one systematically. Bearing in mind that a sprain may be properly defined as "a rupture of some or all of the fibres of a ligament or tendon," I have come to the conclusion that before it can be diagnosed with certainty two criteria must be satisfied: first, there must be pain referred to the site of injury when the injured ligament is put on the stretch; and, secondly, tenderness on pressure at the site of injury must be elicited, the ligament being relaxed. The following rules for examination must therefore be observed:

Rule III.—Without touching the suspected ligament, manipulate the limb so that the ligament will be stretched; if it is torn the patient will now refer pain to the site of injury.

Rule IV.—Without touching the suspected ligament manipulate the limb so that the ligament will be relaxed; now palpate systematically along the course of the ligament. If it is torn the patient will complain of tenderness—that is, pain on pressure—localized to the site of the injury. If the examiner is experienced he will also be able to feel the effusion present at the site of injury.

If these two rules yield positive findings, and only if *both* are positive, a diagnosis of a tear of the ligament examined can be made. The examination should be conducted in the above order because if tenderness has been elicited over the ligament the patient is likely to refer pain to that area during the subsequent manipulation. This order of examination, carried out in the manner described, is useful in the detection of malingering, unless the patient has a considerable amount of anatomical knowledge.

Indications of Fracture

It now remains to palpate in a careful systematic manner the bony prominences related to the joint, seeking points or lines of localized tenderness indicative of fracture according to the following rule:

Rule V.—With the joint in the position of ease, palpate the subcutaneous bony surfaces and outlines around the joint systematically: a strictly localized area of marked tenderness indicates a likely line of fracture; if this be present an experienced examiner will be able to feel the actual line of separation.

It is advisable always to use the same fingers for palpation so as to develop their sense of touch; it is surprising to what a degree this can be increased. It is of course equally important to lay the pulp of the palpating finger or fingers almost flat on the surface to be examined and to impart a slight rotatory or rolling movement to the fingers at the moment of making pressure.

Rule VI.—Radiograph the joint in two planes—antero-posterior and lateral.

There are three reasons for taking radiographs: to confirm the clinical diagnosis; to obviate the possibility of missing a bony injury, or to determine its exact extent; and because the courts tend to regard the absence of x-ray examination in cases of suspected bony injury as indicative of negligence on the part of the medical attendant. If there is a large effusion into the joint it may be aspirated to facilitate the clinical examination.

Removal of Extravasation and Oedema

If there is a very considerable amount of extravasation and oedema in the subcutaneous tissues around the joint this may interfere with the examination, especially palpation. It may be removed by firm vibratory massage if the part is not too tender, or a pressure bandage may be applied for twelve or twenty-four hours, or even longer. It is important to remember that an improperly applied pressure bandage may do damage. To avoid this possibility it should be put on as follows: the affected joint should be wrapped in several thick layers of soft wool and then bandaged from below upwards. So long as plenty of wool is used one cannot bandage too tightly, as Sir Robert Jones used to point out. After a few hours, as the swelling diminishes the bandage becomes loose; if then it is wished to decrease the swelling further another light bandage can be applied over the first one without interfering with it. There is nothing to prevent a radiograph being taken with this bandage on. While this pressure bandage may be very useful as a preliminary to examination and treatment, there is less and less need to employ it as one's clinical experience of these injuries increases.

Summary

Six simple rules for conducting the general examination of injured joints are described. Acknowledgment is made to the teachings of the late Sir Robert Jones.

A quarterly court of the directors of the Society for Relief of Widows and Orphans of Medical Men was held on April 10, with Mr. V. Warren Low, president, in the chair. The deaths of three members were reported. One widow had died. She came on the funds in 1924 and had received £1,200 in grants. Her late husband had paid £52 10s. in subscriptions. Applications for relief were received from two widows of members: one, aged 70, was voted a yearly grant of £50 from the ordinary funds and one of £25 from the Brickwell Fund; the other, who was under 65 years of age, was voted a yearly grant of £50 from the ordinary funds and one of £10 from the Brickwell Fund. A special grant of £26 5s. was voted to a widow to enable her daughter to continue her medical studies. Membership of the society is open to any registered medical practitioner who at the time of his election, which is by ballot, is residing within a twenty-mile radius of Charing Cross. Only the widows and orphans of deceased members are eligible for relief. Full particulars of the society may be obtained from the secretary at 11, Chandos Street, Cavendish Square, W.1. The annual general meeting will be held on May 15.

Clinical Memoranda

Congenital Acholuric Jaundice in an Infant and Mother

Acholuric jaundice is sufficiently rare in infancy to make the following case worth recording.

CASE REPORT

A doctor's child aged 14 months came under observation in December, 1939. The parents stated that he had had a pronounced jaundice affecting the whole body and conjunctivae for the past four months—that is, since the age of 10 months. Previous to this he had been healthy and had progressed well in every way. Since the jaundice appeared he had become flabby, took food badly, and had caught several colds, with bronchitis. The jaundice had persisted, though it varied in intensity from time to time during the last four months.

When seen he was in poor health, was fretful, and took little food, and the skin was of a lemon-yellow colour. The spleen was enlarged to three fingerbreadths below the costal margin. The urine and faeces were dark and contained urobilin. He was markedly anaemic, though he had had iron continuously for three months. The blood count showed: red cells, 2,523,000 per c.mm.; leucocytes, 9,200 per c.mm.; haemoglobin, 34 per cent.; and colour index, 0.7. There was considerable anisocytosis and poikilocytosis. Blood platelets were numerous. The red cell fragility was increased, haemolysis occurring at 0.55 per cent. and being complete in 0.5 per cent. The blood belonged to Group A (II).

The child was admitted to the Royal Manchester Children's Hospital on December 6, 1939, and after ten days his general condition had improved a great deal; he began to take food better and was more contented. Large doses of ferrous sulphate were given and the blood condition improved. During this time he had an intermittent rise of temperature.

At the end of a fortnight he was so much better that it was decided to operate. Splenectomy was performed by Mr. Gow, the spleen being easily delivered and practically no blood was lost. The spleen weighed 3 oz. and was hard and cyanotic. Two small gall-stones were palpated in the gall-bladder. Recovery from the operation was rapid; no anxiety for the baby was felt, and no blood transfusion was given. Ten days later the jaundice had completely disappeared and the red cells had increased to 3,552,000 per c.mm. and the haemoglobin to 70 per cent. The red cell fragility had become normal; haemolysis began at 0.45 per cent. and was complete in 0.35 per cent. The infant continued to improve in every way, and he was discharged from hospital on January 6, 1940, after a stay of one month. When seen six weeks later he was a normal healthy baby; there was no sign of jaundice, and the blood count and fragility were normal.

MOTHER'S HISTORY

An interesting feature of this case is the history of the mother. I am indebted to Mr. P. R. Wrigley, surgeon to Manchester Royal Infirmary, for the notes on her case.

She was admitted to hospital in 1924 at the age of 16 years. She had had jaundice of varying intensity since the age of 3, together with pains in the epigastrium and attacks of vomiting. The spleen was enlarged, and she had a secondary anaemia. The fragility of the red blood cells is unfortunately not recorded on the notes. The spleen, weighing 13½ oz., was removed without difficulty. The gall-bladder, which was thickened and contained numerous stones, was also removed. The jaundice disappeared in fourteen days after operation and has not returned since, and the general health has been good. The fragility of the mother's red blood cells was tested while the baby was in hospital, some sixteen years after operation, and showed a decrease; haemolysis began at 0.4 per cent. and was complete in 0.3 per cent.

My thanks are due to Dr. Annie Somerford for the blood investigations.

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