CONGENITAL SYPHILIS DIAGNOSED BY BONE CHANGES

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[WITH SPECIAL PLATE]

With the improvement in medical care of the syphilitic woman at the time of marriage and during pregnancy, congenital syphilis is becoming a comparative rarity. Many working outside special centres have never had the opportunity of examining an infant who is suffering from the disease. The following is a case history of a patient presenting in the classical manner.

Case Report

A full-term male child born on December 13, 1952, was brought to the casualty department on February 25, 1953, with the history that after an outing in his perambulator the preceding afternoon he had refused to move the left upper limb. When his mother attempted to move the arm the child screamed with pain. He was referred to the fracture clinic as a possible case of pulled elbow or as a doubtful case of greenstick fracture of the left upper humerus.

Clinical examination showed a normal healthy-looking baby of 10 weeks. Movements of all the limbs except the left upper limb were normal. That limb was held by the side, and any attempt at movement was resented. There was tenderness on palpation over the metaphysis at both the proximal and the distal end of the left humerus. A doubtful greenstick fracture of the upper humeral shaft without displacement was demonstrated radiologically. The arm was placed in a collar-and-cuff sling and an appointment was made for the child to be seen in a week's time.

The next day the mother returned to the clinic stating that not only did the child resent movement of the arm but he now refused to move the left lower limb.

Further clinical examination confirmed the loss of function of both the left upper and lower limbs. There were no visible physical signs other than the "paralysis," but the metaphyseal regions of all four limbs were found to be tender on palpation. Radiographic examination demonstrated well-marked osteochondritis and chondro-epiphysitis in the long bones of all four limbs. Figs. 1 and 2 (Special Plate) show the right upper limb and the left lower limb. The temporary zone of calcification in the distal metaphysis in the radius and ulna, and particularly the femur, is thickened and shows as a white line. The submetaphyseal zone is decalcified and is shown best in the radius and ulna. The width of this zone indicates roughly the length of intra-uterine infection. The irregularity of the decalcification is best shown at the proximal end of the tibia (Fig. 3). Further radiographs one month later demonstrated increasing irregularity of decalcification and commencing periostitis. The Wassermann reaction was ++; Kahn reaction +; and quantitative Kahn 240 units.

Only after positive serological findings did the mother concede the positive family history. Both parents had received treatment at a special centre from October 2, 1946, until September 13, 1947, when both defaulted. There was an older child born on May 27, 1948, who was serologically and clinically normal.

Discussion

Jones and Lovett (1933) state that osteochondritis is the most common manifestation of congenital syphilis in infants. As in this patient, it is symmetrical and may give rise to the classical pseudo-paralysis. Gumpesberger (1951), in an investigation of x-ray changes in 571 infants and young children of treated and untreated syphilitic mothers, noted

that of 57 serologically positive cases with congenital syphilis 34 showed syphilitic bone changes.

In the above case the diagnosis was made from the positive radiographs. These in turn led to confirmatory serological tests. Had the child not presented with pseudo-paralysis in both the left upper and lower limbs the diagnosis might well have been missed.

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TABETIC CHARCOT'S SPINE REPORT OF EIGHT CASES

BY

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In 1868 Charcot first described tabetic arthropathy of the spine. The condition is believed to be the rarest arthropathy occurring in *tabes dorsalis* and is a relatively uncommon disorder. Charcot's spine is diagnosed largely on circumstantial evidence (stigmata, history, Wassermann reaction) rather than on local recognition. It may be discovered quite accidentally during the course of a barium-meal examination.

The following eight cases seen during the past two years in the Department of Venereology, Sheffield Area, are thought to be interesting enough to merit publication.

Case Reports

Case 1.—A labourer aged 50 was admitted on November 14, 1950, to the medical ward, City General Hospital, with severe abdominal pain, and a twelve-months history of delay in micturition. He had clinical signs of *tabes*—Argyll Robertson pupils, absent knee- and ankle-jerks, positive Romberg's sign—and "lightning" pains in the limbs and chest. Barium meal and fasting test meal were normal. He had been treated for syphilis 15 years previously, but defaulted. The blood Wassermann reaction and Kahn tests were negative. On November 24 he complained of pain in the lumbar area. X-ray report on lumbar spine: "Lesion involves second and third lumbar vertebrae chiefly; there is considerable destruction of bone, with the separation of the fragments and new bone formation. Mainly a destructive lesion with little if any sclerosis. There is fairly marked scoliosis." Examination of the cerebrospinal fluid showed: clear fluid; Wassermann reaction positive 1:2; white cells, 10 per c.mm.; protein, 120 mg. per 100 ml.; globulin, very slight increase; Lange, 0000000000. Despite treatment with penicillin, arsenic, and bismuth, in August, 1952, the patient complained of tenderness of the right foot, and the radiologist reported the appearances as those of well-developed Charcot's disease.

Case 2.—A millwright aged 53 attended the special treatment centre, Sheffield Royal Infirmary, on March 1, 1948, complaining of "shooting" pains in his legs of three years' duration. He had clinical signs of *tabes dorsalis*—Argyll Robertson pupils, knee- and ankle-jerks absent. The blood Wassermann reaction was positive 1:160, Kahn ++++. Penicillin, tryparsamide, and bismuth gave little relief of symptoms. On February 21, 1952, he complained of pain in the lumbar region. Examination revealed marked scoliosis. Lumbar puncture was attempted, but was not

successful. X-ray report on spine: "In the lumbar spine there is gross destruction and deformation of the second and third lumbar vertebrae with some bone sclerosis. In the absence of injury this could well be accepted as an example of Charcot's spine." Clinically there was no limitation of spinal movements.

Case 3.—A retired man aged 68 attended Sheffield Royal Infirmary on March 10, 1952, complaining of severe shooting pain in his legs on and off for the past 20 years. He had been treated for syphilis in 1929. Examination revealed typical signs of tabes—bilateral ptosis, Argyll Robertson pupils, knee- and ankle-jerks absent, Romberg's sign strongly positive. Blood Wassermann reaction was negative, Kahn reaction negative. Cerebrospinal fluid: clear; Wassermann reaction, negative; cells, 0 per c.mm.; protein, 40 mg. per 100 ml.; globulin, no increase; Lange, 0000110000.

Procaine penicillin G in oil, followed by arsenic and bismuth, were given, but he continued to get severe shooting pains in the legs. On April 13, 1953, the x-ray report on the spine read: "There is a slight forward displacement of the fourth lumbar vertebra on the fifth, and the appearances are consistent with a moderate degree of neuropathic spine."

Case 4.—A housewife aged 55 had had asthma since early childhood. Routine Wassermann reaction and Kahn test were positive in March, 1952. She was referred to the special treatment centre on March 27, where she complained of "shooting" pains in her legs and back of nine months' duration. There were clinical signs of tabes dorsalis—Argyll Robertson pupils, knee- and ankle-jerks sluggish, Romberg's sign positive. Cerebrospinal fluid: clear; pressure normal; white cells, 46 per c.mm.; protein, 50 mg. per 100 ml.; Lange, 3221000000; Wassermann reaction not reported on. She continued to get low back pain, also pain in the rectum, especially at night, and over buttocks. X-ray report on spine: "There is an increase in lumbar lordosis with scoliosis, subluxation of the fourth lumbar vertebra and loss of disk space between it and the third. There is new bone formation in the tissue to the left of the third and fourth vertebrae and sclerosis of the bodies of the third, fourth, and fifth lumbar vertebrae. The appearances are those of a neuropathic spine."

Case 5.—A labourer aged 40 attended the special treatment centre of Doncaster Royal Infirmary on May 4, 1952, complaining of swelling of the left testicle for two days.

Case 5. Radiograph of spine.

He denied extra-marital intercourse. He had been treated for syphilis at another hospital from July, 1944, to June, 1946, when his blood Wassermann reaction was found positive after his first wife's infidelity, and then defaulted from surveillance. Examination showed a gumma of the left testicle and typical signs of tabes dorsalis—pupils dilated and fixed, knee- and ankle-jerks absent, Romberg's sign positive. Blood Wassermann reaction and

Kahn test were doubtful. His mother had been treated for venereal disease and his four brothers and three sisters had died in early childhood. One brother had no nose and one sister had only one arm. The patient had a well-marked

kyphoscoliosis and swelling of the right knee-joint. X-ray report on spine on May 7: "A well-marked scoliotyphosis of the dorsal spine with reverse curve in the lumbar region. In the latter region the lower three lumbar vertebrae show a marked deformity due to bone destruction and proliferation. The intervening disks are disorganized and there is a marked hyperostosis of the articular processes. The appearances are consistent with neuropathic bone disease" (see illustration). An x-ray film of the right knee showed a neuropathic joint. In August, 1945, whilst attending another hospital, an x-ray examination showed extensive scoliosis and osteoarthritis of the spine. The patient had no symptoms referable to the spine or right knee-joint. In view of the family history he would appear to be suffering from hereditary Charcot's spine. He later developed a perforating ulcer on the ball of the right foot.

Case 6.—A labourer aged 59 attended the orthopaedic department of Doncaster Royal Infirmary on October 4, 1952, with a spontaneous fracture of the left femur. A Smith-Petersen pin was inserted, and during serial x-ray control arthritic changes were noticed in the lumbar spine. The changes are consistent with Charcot's spine, although not absolutely typical. The blood Wassermann reaction was positive 1:80; Kahn +++. He had clinical evidence of tabes dorsalis and slight scoliosis with the convexity to the left, but there were no symptoms referable to the spine. Cerebrospinal fluid examination showed: clear fluid; pressure normal; cells, no increase; globulin, negative; Lange colloidal gold curve, 0011100000; Wassermann reaction not reported on. In 1918 he had had 12 injections of arsenic for syphilis.

Case 7.—A miner aged 57 had classical signs of tabes dorsalis—pupils fixed, knee- and ankle-jerks absent, Romberg's sign positive. The blood Wassermann reaction was positive 1:20; Kahn +++. Had been treated at the special treatment centre of Doncaster Royal Infirmary from November 4, 1949, to July 14, 1950, with penicillin, arsenic, and bismuth; then defaulted. In May, 1953, he developed a swelling of the ankles and reattended. Examination showed pitting oedema of the ankles; nothing gross in the cardiovascular system; urine normal; scoliosis with the convexity to the left; tenderness on pressure over the third lumbar vertebra. X-ray report on spine: "The lumbar spine shows a marked scoliosis convexity to the left with flattening of the disk and lipping on the concavity of the spinal curve. There is a good deal of sclerosis of the vertebral bodies and the upper cartilage plate of the fifth lumbar vertebra is collapsed. The appearances are consistent with neuropathic disease." The patient had had an injury to the spine in a coal-mine on October 20, 1947. An X-ray film taken next day was reported on as follows: "Lumbar scoliosis, congenital abnormality of sacrum or last lumbar vertebra. Marked osteoarthritis of spine. No recent bony injury. Developmental abnormality at lumbosacral junction."

Case 8.—A miner aged 55 was referred to the special treatment centre of Doncaster Royal Infirmary in April, 1951, as a case of tabes dorsalis. There were classical signs of tabes, including Argyll Robertson pupils, knee- and ankle-jerks absent, Romberg's sign positive. He complained of severe "shooting" pains in his legs and trunk. The blood Wassermann reaction was positive; Kahn +++. Cerebrospinal fluid: clear; pressure normal; cells, no increase; protein, 15 mg. per 100 ml.; Lange, 1122100000. Penicillin, arsenic, and bismuth produced no improvement in shooting pains. Later he complained of severe pain in the right hypochondrium somewhat suggestive of gastric ulcer pain. Barium-meal examination revealed no ulcer in either the stomach or the duodenum. However, during screening marked arthritic changes were noticed in the lower lumbar spine, somewhat suggestive of neuropathic disease. Further x-ray films of the spine revealed very extensive changes in the lower lumbar spine with bone destruction and new bone formation, the appearances being those of Charcot's spine. Clinically there was no deformity of the spine or any limitation of spinal movement.

Discussion

According to Herndon (1927), one of the most characteristic features of Charcot's spine is the disproportion between the severity of the process disclosed by the x-ray film and the slight discomfort and disability complained of by the patient. Usually, clinical evidence of tabes is present. One of the earliest and most constant signs is deformity which is due to bone destruction and subsequent compression of the vertebral body with posterior or lateral displacement. This process is usually limited to one or two vertebrae, and is most often found in the lower dorsal and lumbar spine. The resulting deformity is usually a kyphus with more or less lateral curvature and rotation. There is usually no tenderness and no muscle spasm.

Considerable discomfort is often caused by pressure of the collapsing spine or that of hypertrophic bone formation upon the spinal nerves. These root pains are usually gradual and insidious in onset and of moderate severity. Occasionally, however, they attain considerable intensity, somewhat simulating gastric crises or peptic ulcer pain. The mobility of the spine is little involved unless in cases of excessive destruction.

The existence of hereditary Charcot's spine has long been doubted, but it is now an acknowledged fact. Various observers consider many cases of apparent Pott's disease associated with other joint involvement in young children as luetic.

It is claimed that radiologically the alternation between sclerosis and rarefaction, bone absorption and bone apposition, is the most striking feature in Charcot's spine. In some cases the destructive, in others the proliferative, changes prevail. Often both are seen concomitantly.

The treatment of Charcot's spine consists in general anti-luetic therapy and local measures for support and immobilization of the spine.

Summary

Tabetic Charcot's spine probably occurs much more commonly than most textbooks lead us to believe. Severe persistent shooting pains, especially of a girdle distribution, should indicate an x-ray examination of the spine in order to rule out Charcot's disease. Brief case histories of eight tabetics with Charcot's spine are presented.

In Case 7 trauma would appear to have been a pre-disposing factor in the aetiology of the Charcot's spine.

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Because reports were being received that some nurses and doctors working both in hospital and in public health services were suffering from dermatitis after giving injections of streptomycin and penicillin, an inquiry was instituted into the best way of preventing it. As a result, recommendations for an improved injection technique for giving antibiotics were approved by the Standing Medical Advisory Committee of the Central Health Services Council and announced to hospitals and local health authorities (see *British Medical Journal*, 1953, 2, 40). The Ministry of Health has now made a ten-minute 16-mm. film to illustrate the technique. The film is for use in teaching student and postgraduate nurses, and is also suitable for showing to doctors, pharmacists, and medical students. Copies of the film may be hired (5s. for the first day, 1s. for subsequent days) from the Central Film Library, Government Building, Bromyard Avenue, Acton, London, W.3. The film was written and directed by Margaret Thomson and made by Basic Films.

VITAMIN K₁ IN ANTICOAGULANT THERAPY

BY

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Vitamin K₁ has proved to be a most potent antidote to anticoagulant drugs with a prothrombopenic action, and is clearly the antidote of choice in controlling the dangers of anticoagulant therapy. The use of large doses of vitamin K₁ in patients on anticoagulant therapy, with the consequential restoration of the blood prothrombin to normal or near normal levels, only, however, replaces the danger, or possible danger, of haemorrhage by that of a possible further thrombotic or embolic episode. In addition, large doses of vitamin K₁ are very likely to make the patient refractory to further anticoagulant therapy. Valuable time may therefore be lost in assessing the correct dose of the anticoagulant drug required to restore and maintain an adequate reduction in the blood prothrombin level. Therefore, whenever it is intended to continue anticoagulant therapy it is essential to use vitamin K₁ with the utmost discretion and to prescribe, so far as is possible, the *minimum* effective dose.

Assessment of Minimum Effective Dosage

To assess the minimum effective dose of vitamin K₁ required to antagonize the action of anticoagulant drugs is not easy. In addition to the actual level of the blood prothrombin (which is, of course, in itself very important) and the presence or otherwise of haemorrhage, several other factors must be considered, including the type of anticoagulant used and the general condition of the patient. Long-acting cumulative anticoagulants such as dicoumarol, phenylpropyl-hydroxycoumarin ("marcoumar"), and cyclocumarol ("cumopyran") require larger doses of vitamin K₁ than the short-acting anticoagulants, such as phenylindandione ("dindevan") or ethyl biscoumacetate ("tromexan").

The stage of anticoagulant therapy reached must also be taken into account; sometimes in the first few days of anticoagulant therapy, owing to the unavoidable difficulty of assessing the correct dose of the anticoagulant, the blood prothrombin may be reduced to too low a level. In most cases merely withholding further doses of the anticoagulant will then be sufficient to restore the prothrombin content to within a therapeutic and safe range. Where, however, the blood prothrombin is so severely reduced that haemorrhage is likely it is wise to give vitamin K₁, but small doses will in most cases be effective. This is because, unless the dose of the anticoagulant has been grossly miscalculated, there is no large accumulation of the anticoagulant in the body which would require large doses of vitamin K₁ to counteract its effect.

The general condition of the patient is also of prime importance in assessing the minimum effective dose of vitamin K₁ required to antagonize the action of anticoagulant drugs. For example, the presence of heart failure, shock, or deficient renal or liver function will mean that large doses of vitamin K₁ are needed if it is to be effective. The only failure met with in vitamin K₁ therapy has been in desperately ill patients who subsequently died within a short period.

It has been shown previously (Toohey, 1952) that 500 mg. of vitamin K₁, given orally, is entirely effective in antagonizing and controlling haemorrhage due to massive doses of such anticoagulants as dicoumarol, phenylindandione, and ethyl biscoumacetate. Such massive doses of anticoagulants as were used in these experiments would not, however, normally be given in clinical practice; nor, therefore, are