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POSSIBLE SYPHILITIC SPONDYLITIS

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Among the infectious diseases affecting the spine, syphilis is very rare. The changes due to syphilis are gummatous spondylitis and Charcot's arthropathy.

Charcot's arthropathy is a trophic complication of neurosyphilis. It is usually found in the mobile part of the spine. Most of these cases are symptom-free. Trophic destruction of the spine may lead to lesions in neural roots and/or spinal medulla.

Bone syphilis is a manifestation of tertiary syphilis occurring 6–20 years after the primary infection in about 1.5 per cent of untreated cases (Nielsen 1950, Speed & Boyd 1936, Gjestland 1955). The superficial bones (tibia, sternum and skull) are affected more often than the deep ones. Of the latter, gumma of the spine is so rare that only case reports have been published (Johns 1970). Distinct destruction of vertebrae is found in gummatous spondylitis. The symptoms, signs and x-ray findings can simulate other infectious spondylites, especially tuberculous spondylitis, or neoplasm of the vertebral column. The symptoms ensue from compression of the neural elements or destruction itself.

In the following we present a case of syphilitic spondylitis.

CASE REPORT

The patient, a 38-year-old painter, was first seen in March, 1967, at the Department of Orthopaedics and Traumatology, University Central Hospital, Helsinki.

Previously he had been in good health. The first symptoms of the present illness appeared in the spring of 1966. During heavy work he developed pain in the lumbar spine and numbness and weakness in the lower limbs.

When the symptoms became worse the patient was sent to the clinic. At the clinical examination the knee and ankle tendon reflexes were absent, but the Lasègue sign was negative. Stocking-like anesthesia was found in the distal parts of the lower limbs. Bladder and bowel function was normal and the muscles intact.

Figure 1. March, 1967. Spondylolisthesis of 11 mm in L IV and narrowing of the intervertebral space.

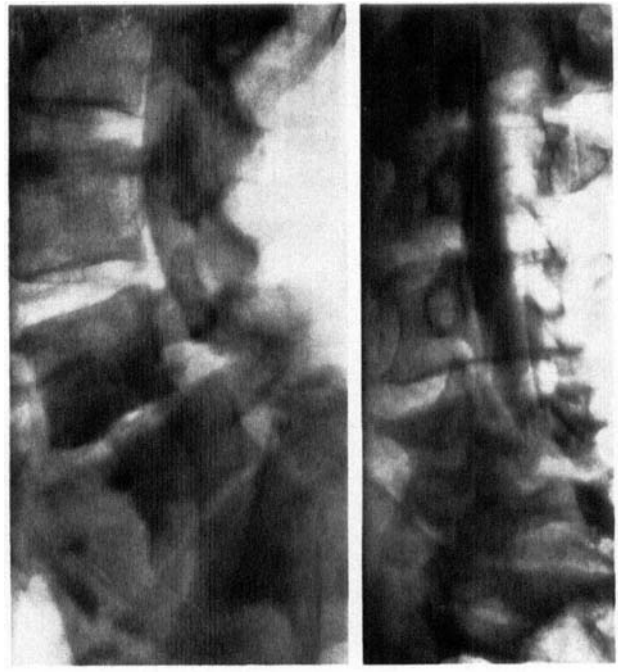

Figure 2. Myelography in February, 1969. Spondylolisthesis in the L IV vertebra causing a total block in the subarachnoideal space.

Figure 3. February, 1969. Marked narrowing of the intervertebral space L IV–V and destruction of disc space and osteolytic lesions in the adjoining vertebrae.

Spondylolisthesis of 11 mm in LIV was seen (Figure 1) in the x-ray examination and the intervertebral space L IV–V was narrowed. Myelography revealed slight narrowing of the subarachnoideal space. It was considered to be due to the spondylolisthesis.

In the blood tests haemoglobin was 16.4 g/100 ml, the white cell count 8100/mm^3, and eryhtocyte sedimentation rate (ESR) 9 mm/h. The routine urine tests were normal.

The patient denied that he had ever had venereal disease. No signs of present or recent syphilis were found. In the serological tests for syphilis (STS) WaR and CholWaR were negative, but the Kahn and VDRL (Venereal Diseases Research Laboratory) slide tests were positive. The treponema pallidum immobilisation test (TPI) and fluorescent treponemal antibody test (FTA) were positive in the serum. The cerebrospinal fluid cell count was normal, but liquor proteins were slightly increased (up to 52 mg/100 ml—possibly due to myelography); WaR, CholWaR, Kahn, the VDRL slide test, TPI and FTA were negative. In the neurological examination there were no signs compatible with neurolues. The positive tests for syphilis were overlooked and spondylolisthesis was considered to be the correct diagnosis. Therefore, the patient did not receive treatment for syphilis. A back brace was made for him.

In January, 1969, the patient was again admitted to the hospital. He had been continuously disabled for work. Pain in the lumbar area as well as numbness and stinging in the lower extremities had become worse. The clinical signs were the same as two years earlier.

At x-ray, spondylolisthesis and the narrowing of the intervertebral space L IV–V were more marked than before and, moreover, destruction of the disc space and an

Figure 4. July, 1971. Bone consolidation between vertebrae L IV and V as an end result of the inflammatory process.

osteolytic lesion in the adjacent parts of the bodies were seen in the adjoining vertebra. In myelography, total block at the level L IV–V was found (Figure 2).

Serological and treponemal tests for syphilis in the serum and in the cerebrospinal fluid were as two years previously. After consulting the venereologist at the Department of Dermatovenereology, the patient received 600,000 IU of procain penicillin once a day for 15 days.

Decompressing laminectomy was considered to be indicated because of progression of the neurological symptoms and the myelography finding. In February, 1969, laminectomy of the L IV vertebra was performed, fibrocartilaginous tissue was removed from the posterior edge of the fifth vertebra and the neural elements were liberated. A biopsy was taken from the spondylitic area. At the histological examination, this tissue was found to consist of granulomatous inflammation compatible with gummatous tissue, but indistinguishable from productive tuberculosis.

The post-operative x-ray examination disclosed a marked narrowing of the intervertebral space L IV–V and distinct spondylitic changes (Figure 3). The ESR was repeatedly under 10 mm/h and the white cell count under 10,000/mm^3. In the Mantoux test 0.1 TU of PPD gave a negative result.

There were no post-operative complications. The patient continued to use the rigid back brace. He was still disabled for work as a painter or any other manual work.

At the follow-up examination in June, 1971, the patient's subjective condition was unchanged. The physical examination revealed no changes from the status in

1969. X-ray examination (Figure 4) revealed bony consolidation between the fourth and fifth lumbar vertebrae as an end result of the inflammatory process.

DISCUSSION

Infectious diseases of the vertebral column are still a cause of painful back. The possibility must, therefore, constantly be borne in mind. Pyogenic bacteria are as often a cause of spondylitis as Myobacterium Tuberculosis, but Treponema Pallidum is a rarity (Kirkaldy-Willis & Thomas 1965).

The most common syphilitic involvement of the bones is Charcot's arthropathy. It is a manifestation of neurosyphilis (Drennan et al. 1971). In such cases clinical signs of tabes dorsalis are to be found and the serological and treponemal tests for syphilis are constantly positive both in the serum and in the cerebrospinal fluid.

Gummatous spondylitis is a manifestation of active tertiary syphilis. Gumma is the syphilitic granulomatous process which destroys normal tissue, i. e. skin and bones. In tertiary syphilis the VDRL slide test is almost always positive, but not the classical WaR reaction. Treponemal tests (TPI and FTA) are even more sensitive and specific. The VDRL test is useful as a screening test, but the diagnosis of syphilis must be based on the treponemal tests. In the present case, WaR and CholWaR were negative, but the Kahn and VDRL slide tests were positive. The diagnosis was confirmed from the positive TPI and FTA.

Histopathologically, gumma is a necrotic homogeneous mass surrounded by mononuclear and occasionally giant cells. It is sometimes difficult to differentiate from tuberculosis (Lever 1967). In our case, granulomatous tissue with occasional giant cells, but without necrosis or caseation, was seen in the biopsy specimen one month after the antisyphilitic treatment. The microscopical picture was compatible with gummatous tissue, but indistinguishable from productive tuberculosis.

The drug of choice in treatment of syphilis is penicillin. For late syphilis, 600,000 IU of procain penicillin once a day for 15 days is recommended. In cases hypersensitive to penicillin 250 mg of tetracycline four times a day for four weeks is sufficient to cure the disease.

The positive serological tests gradually turn to negative after the treatment, more quickly the shorter the interval after infection. In treated tertiary syphilis the tests will not be negative for several years, if ever.

Correct diagnosis and penicillin therapy are the most important

factors in the treatment of syphilitic spondylitis. Antisyphilitic treatment rapidly produces ossification and bony consolidation by block vertebra. Because of the rapid healing and the neoplastic nature of the lesion a fusion operation is seldom indicated (Dotter 1970, Kiraldy-Willis et al. 1965). Grafting is probably not necessary unless the lesion is very extensive, occupying two or three vertebrae (Johns 1970). In our case decompressing laminectomy was necessary because of compression of the neural roots by pseudospondylolisthesis.

It is well known that syphilitic changes may mimic many diseases. Gumma of the spine can be confused with other infectious spondylites or neoplasm. Although syphilitic spondylitis is a very rare disease, we know that the annual number of new syphilis cases has shown a tendency to increase in recent years (Lassus 1971, Fleming & Bardenstein 1971). Therefore, syphilis must be suspected in every patient with spondylitis or neoplasm of the vertebral column.

SUMMARY

The syphilitic involvements of the spine are reviewed. The case of a 38-year-old man with gummatous spondylitis and pseudospondylolisthesis is described. Progression of the neurological symptoms and grave changes seen in myelography were indications for decompression laminectomy. A biopsy was taken at the operation. The diagnosis of syphilis was based on the x-ray findings, histological evidence of granulomatous inflammation compatible with a gummatous lesion and the positive STS and TPI and FTA in the serum. The patient was treated with 600,000 IU of procain penicillin daily for fifteen days. Because of the neoplastic nature of the lesion, a fusion operation was not performed. Osseous consolidation of the affected lumbar vertebrae was seen at the follow-up examination.

REFERENCES

Dotter, W. E. (1970) Selection of patients for spinal fusion. *Surg. Clin. N. Amer.* **50**, 599.

Drennan, D. B., Faney, J. J. & Maylahn, D. J. (1971) Important factors in achieving arthrodesis of the Charcot knee. *J. Bone Jt Surg.* **53-A**, 1180.

Fleming, T. C. & Bardenstein, M. B. (1971) Brief note of congenital syphilis. *J. Bone Jt Surg.* **53-A**, 1648.

Gjestland, T. (1955) The Oslo study of untreated syphilis. *Acta derm.-venereol.* (Stockh.) **35**, Suppl. 34, 147.

Johns, D. (1970) Syphilitic disorders of the spine. *J. Bone Jt Surg.* **52-B**, 724.

Kirkaldy-Willis, W. H. & Thomas, T. G. (1965) Anterior approaches in the diagnosis and treatment of infections of the vertebral bodies. *J. Bone Jt Surg.* **47-A**, 87.

Lassus, A. (1971) Nykyinen sukupuolitautitilanne Suomessa. *Suom. Lääk.-L.* **26**, 1640.

Lever, W. F. (1967) *Histopathology of the skin*, 4th ed., p. 324. J. B. Lippincott Co., Philadelphia.

Nielsen, J. P. (1950) Follow-up of syphilitics. Late manifestations in 467 male patients with early syphilis followed for 29–36 years. *Acta derm.-venereol. (Stockh.)* **30**, 507.

Speed, J. S. & Boyd, H. B. (1936) Bone syphilis. *Sth. med. J. (Bgham, Ala.)* **29**, 371.

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