Short Notes and Clinical Cases

COMPLETE DEGENERATION OF THE POSTERIOR COLUMNS OF THE SPINAL CORD WITH CHRONIC POLYNEURITIS IN A CASE OF WIDESPREAD CARCINOMATOUS DISEASE ELSEWHERE

By

F. PARKES WEBER AND T. R. HILL, LONDON

THE patient, a gardener, aged 39 years, was admitted to hospital on October 3, 1931, for pneumonia of the lower part of the left lung. There was no fever after October 10, and he was sent to a convalescent home on November 4. Whilst in the convalescent home he had paræsthesiæ (sensation of pricking) in the hands and feet, and on January 8, 1932, he was re-admitted to hospital for marked weakness of the lower extremities causing difficulty in walking; his knee-jerks were absent. The condition was supposed to be one of polyneuritis following pneumonia. His blood-serum gave negative Wassermann and Meinicke reactions. The blood-count showed nothing abnormal excepting that there was relative excess of lymphocytes in the differential count. The urine was free from albumin and sugar. By ophthalmoscopic examination the fundi appeared normal.

Under treatment by electricity, a little massage and liquor strychninæ the patient did not improve, and in the middle of February there was much muscular atrophy in his legs and hands. This muscular atrophy was decidedly more than could correspond to the wasting which was part of his general condition. The cerebrospinal fluid (February 24) gave positive Nonne-Apelt and Pandy reactions, negative Wassermann reaction and no pleocytosis. He complained of severe pains in his hands and feet, and there was much vomiting. At the beginning of March no tendon or periosteal reflexes could be obtained in the upper limbs. Sensations for pain and temperature were absent in both lower limbs up to above the knees but tactile sensation remained; the same sensory symptoms were noted in both hands. There was no disturbance of postural sense, but astereognosis was present in both hands.

Various drugs were tried without effect. At the end of April he complained greatly of burning sensations in the upper limbs distal to the elbows and in the whole of the lower limbs.

In May, owing to occasional vomiting, the gastric contents were examined

(a)

(b)

Transverse sections of (a) lower cervical region, and (b) mid-dorsal region of spinal cord, stained by Spielmeier modification of Weigert's method, showing complete degeneration of posterior columns of Goll and Burdach.

but no achlorhydria nor anything abnormal was found. He could walk a little, but slowly ; no ' high stepping ' gait.

In September his general condition had much deteriorated and he could

eat hardly anything. A swelling of the left parotid salivary gland had gradually appeared. At the beginning of October the emaciation was great and there was still vomiting. On October 4 the pulse was 120 ; respiration 30 ; the temperature was 97.4°F. , but there had been slight fever (100.1°F.) on the morning of the previous day. There was a leucocytosis of 19,000. He was being given occasional intravenous injections of a glucose solution. He died with great dyspnoea after one of these injections on October 6, 1932.

The *necropsy* showed extensive malignant neoplastic disease in both lungs (especially the left), the pancreas, both suprarenal glands (the right more enlarged than the left), the liver (especially the left lobe), both kidneys, the spleen (which was moderately enlarged, weighing 250 grammes), and the upper part of the vertebral column ; the enlarged left parotid salivary gland was likewise the site of neoplastic infiltration. Some of the abdominal lymphatic glands were infiltrated and there were a few minute metastases in the peritoneum over the colon.

There was no involvement anywhere of the spinal meninges. The whole of the spinal cord was removed for further examination.

Microscopic examination of the tumours showed that they were all of the same histological structure, resembling the so-called oat-celled carcinoma of the lung.

Unfortunately the peripheral nervous system was not examined, but transverse microscopical sections of the spinal cord were made from : (1) the lower cervical region ; (2) the mid dorsal region ; and (3) the lumbar enlargement. Sections were stained by the Spielmeyer modification of the Weigert method and by hæmatoxylin and eosin. The sections of the cord showed complete—or practically complete—degeneration of the posterior columns in all regions, cervical to lumbar. The grey matter of the cord and the other ascending and descending tracts were normal. There was no sign of any gross inflammatory reaction in any section, and no engorgement or ‘cuffing’ of vessels, though macrogliosis was evident in the degenerate area. The pathological picture suggested a degeneration of the posterior columns, secondary to some general cause, which had produced widespread demyelination and disappearance of axis-cylinders ; the degeneration was equally severe in all sections.

REMARKS

The vomiting may have been largely due to suprarenal involvement, but one can hardly say how long the carcinomatosis had been in progress. Although there was no post-mortem examination of the peripheral nervous system, it is fairly certain that genuine polyneuritis was present as well as the practically complete degeneration of the posterior columns of the spinal cord, for there was nothing in the spinal cord that could have caused the severe muscular atrophy in the legs and hands. It is very likely that the carcinomatous disease had already commenced at the time of the onset of the first

nervous symptoms (viz., the paræsthesiæ in the hands and feet) soon after the patient's recovery from the pneumonia at the end of 1931. The pneumonia itself may have been on a local carcinomatous basis. One is inclined to think that the degeneration of the posterior columns of the spinal cord was secondary to a carcinomatous toxæmia, but there seems to be no great support for such an assumption in the literature of the subject, though it is acknowledged that polyneuritis may develop on the basis of a carcinomatous cachexia (compare H. Oppenheim, *Nervenkrankheiten*, 7th German edition, Berlin, 1923, p. 821). It is, however, probably not uncommon for varying degrees of involvement of the spinal cord to occur in various forms of polyneuritis, for example, in lead and diphtheritic neuritis.

We have to thank Professor J. C. G. Ledingham for having so kindly provided us with microphotographs illustrating the sections of the spinal cord.