MYELITIS DUE TO VACCINATION

BY

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MYELITIS as part of a post vaccinal encephalomyelitis is well known, and histological changes occurring in the spinal cord were fully described in the earlier case records (Turnbull and McIntosh, 1926). The purpose of the present paper is to draw attention to the fact that myelitis uncomplicated by encephalitis also occurs as a sequel to vaccination. The following case which I have recently had the opportunity of observing is typical of this group.

An R.A.F. recruit, aged 27, received his primary vaccination 3rd September, 1942, over the left deltoid, and at the same time received an injection of 0.25 c.c. of T.A.B. and 1 cc. of A.T.T. vaccines in the right arm. On the 12th he received a second injection of 0.5 c.c. of T.A.B. He sweated that night and felt feverish, suffered from stabbing pains in the arms, especially at site of vaccination: the pains persisted for some days. As they passed off he developed pain in his calves and feet, and noticed that his legs were not properly under control. He did not report sick till the tenth day of his illness when he fell on parade. He was admitted to Station Sick Quarters, where he was found to be feverish. The fever continued for four or five days, pain and weakness of his legs was more persistent, but a full neurological examination soon after admission to Sick Quarters is reported to have revealed no objective signs. He was discharged from Sick Quarters after seventeen days illness and did light duty for five days, then on the 5th of October, on getting out of bed, he found that his legs were stiff and wobbly and he had no control of his bladder. The condition appears to have been progressive, incontinence becoming complete the next day, and by the twenty-third day of his illness he was completely paralysed from the waist down, with complete sensory loss to the costal margin, absent tendon jerks and plantar withdrawal responses. A lumbar puncture on this day showed a pressure of 170 mm. of fluid, a pleocytosis of 1,500 lymphocytes per cubic mm. and protein 80 mgm. per cent. Five days later it was noticed that the anaesthesia was receding and in another five days some voluntary movement had returned to the toes. Three deep bedsores and urinary infection had unfortunately developed.

Cutaneous sensation was almost completely restored by the 45th day. By January, 1943, approximately 15 weeks after first symptoms, there was sufficient power in all muscular groups to allow movement against gravity at all joints, but the legs were not sufficiently strong to support the patient. The paralysed muscles were now flaccid, the tendon jerks were just obtainable, the plantars were extensor and control of the sphincters had been regained.

Motor power continued to return and he was taught to walk, first supported under the armpits by a machine and later with two sticks in his hands.

In June, 1943 the bedsores were almost completely healed and the patient could, with one stick, walk up to two miles.

On examination there was very little demonstrable muscular weakness, no abnormality of tendon jerks, tone or sensation, though the plantars remained extensor.

The case here described resembles the original 47 cases of post vaccinal encephalitis selected by the Andrews Committee (Vacc., 1928) in being febrile and in occurring within the 2nd to 24th day after vaccination; like the majority, the vaccination was the primary one and like five of the said group, the illness occurred on the 9th day after vaccination; and resembles the majority of the non-fatal cases in the completeness of its recovery.

The increase of protein and leucocytosis are also common features in post vaccinal encephalomyelitis (Vac., 1930). It differs, however, markedly from the 47 classical cases, in that the symptoms were spinal rather than cerebral and there was no headache, vomiting, strabismus or clouding of consciousness.

An almost identical case is described by Gounelle (1931) (see Table). This case, also a young soldier, had a partial remission, and paraplegia developed suddenly on the 13th day of his illness. Such a remission in the course of post-vaccinal encephalomyelitis is not an unusual finding and is in fact described in the first published case (Comby, 1907).

I have been able to trace twelve other cases of myelitis following vaccination within the 3rd to 15th day.

Two of these occurred among the original 63 cases considered by the Andrews Committee (May, 1925) and a further 2 among the 44 cases submitted following Committee's request for further information in the medical press April, 1926. At the time of the publication of the Ministry of Health report on vaccination 1928, these cases of uncomplicated myelitis were not thought to be due to vaccination. In a further report, November, 1930, the Committee describe 3 cases of uncomplicated myelitis among 90 cases of post-vaccinal encephalomyelitis. One of this group is of especial interest as the patient (see Table, 1930, "case 148") died of urinary infection on the 94th day and at autopsy the histology of the nervous system was described "In the pons and spinal cord there are perivascular and marginal areas of demyelination such as are found in post vaccinal encephalomyelitis. The lesions have reached the stage at which fat-granule cells are very abundant (M.M.T.)."

TABULATED FINDINGS OF PREVIOUSLY PUBLISHED CASES OF MYELITIS FOLLOWING VACCINATION

Date and Author	Patient	Incubation	Onset	Physical signs	Progress and result
1943	Male, aged 27	9th or 10th day after primary vaccination	Pyrexia, muscular pains, unsteadiness of legs for 17 days. Partial remission; 23rd day sudden paraplegia and incontinence.	Flaccid paralysis of legs and analgesia below seg. D.5. C.S.F. 25th day protein 0.08 per cent.; 1,500 lymphocytes per c.mm.	Gradual recession of level of anaesthesia, sensation normal in 45 days. Return of motor power in 5 months; persistent extensor plantaris.
1942 Anderson and McKenzie, Case 7	Male, aged 16	14th day after primary vaccination	Retention of urine and signs of transverse myelitis in thoracic region.	—	Recovered.
1937 Clouston and Quins	Female, aged 9	5th day after vaccination	Fever and pain in neck for 2 days, weakness of legs, retention of urine. 3rd day paralysis of legs.	Flaccid paralysis and sensory loss below seg. 6 D. C.S.F. on 4th day 5 lymphocytes. No globulin.	Gradual recession of level of anaesthesia starting on 5th day. Gradual return of motor power, in 5 months normal except for exaggerated reflexes.
1932 Paulian, Aricesco and Finkelstein	Female, aged 7	3rd day after 1st re-vaccination	3 days fever two days after vaccination. Two weeks later pains in calves, unable to walk. Retention of urine. Attitude of flexion.	After an interval of less than 6 months spastic palsy in flexion of arms and legs with muscular wasting and no sensory changes.	Recovered power of walking during a 1-month period of observation though obvious quadraplegia persisted.
1931 Gounelle	Male, aged 21	14th day after 1st vaccination	7 days' fever, unsteadiness of legs. Positive Rhombert's signs and brisk knee and ankle jerks. Partial recovery; 13th day sudden paraplegia and retention of urine.	No notes on sensory findings or exact level of palsy. C.S.F. on 5th day protein 0.056 per cent. 25 lymphocytes per c.mm. Muscular fib. observed in acute phase.	Rapid recovery in one month. Able to return to work.
1931 Brockbank	Male, aged 6	14th day after vaccination	One week's fever with sudden paralysis of legs and retention of urine, anaesthesia to below seg. 7 D. on 2nd day. Spread of anaesthesia to seg. 3 D.	Flaccid paraplegia and doubtful weakness of left arm and anaesthesia. C.S.F. on date unknown pressure 160 mm. 50 cells per c.mm. and Globulin ++	Gradual recession of level of anaesthesia. No further recovery in subsequent 6 months.
1929 Peake	Female, aged 8	8th day after revaccination	Fever and pains in abdomen. 4th day became drowsy and had retention of urine. 7th day paraplegia discovered.	7th day flaccid paraplegia and anaesthesia to umbilical level. Fever persisted about 3 weeks due to urinary infection.	Gradual recession of level of anaesthesia. Sensation normal 50th day, able to walk with slight support on both sides and partial recovery of sphincters in 3 months. * Complete recovery in 6 months.
1930 Further report of Committee on Vaccination, Case 148	Female, aged 46	13th day after revaccination	Fever and pricking sensation in legs; 3rd day motor and sensory paraplegia and disturbance of sphincters.	Flaccid paraplegia to level of higher thoracic segments. Histology, see text.	Death from urinary infection on 94th day. Some evidence of returning of functions of cord as sphincter control was regained before death. Autopsy.

* Personal communication.

TABLE I—continued

Date and Author	Patient	Incubation	Onset	Physical signs	Progress and result
1930 Further report of Committee on Vaccination, Case 85	Female, aged 19	10th day after primary vaccination	Headache, vomiting, loss of power in legs and retention of urine.	Considered doubtful. Hysteria suggested as diagnosis.	Uneventful recovery in 18 days.
1930 Further report of Committee on Vaccination, Case 90	Female, aged 12	8th day after primary vaccination	"Transient Myelitis"	—	Recovery after 20 days.
1928 Further report of Committee on Vaccination, Case 10	Female, aged 3 months	15th day after primary vaccination	On or about 10/2/26 developed paresis of both legs.	Positive W.R. in child's and mother's blood. Father's blood negative.	—
1928 Further report of Committee on Vaccination, Case 28	Female, aged 15	7th day after vaccination	Headache and pains in all four limbs. 3rd day rigor, delirium. High fever. Lost use of all 4 limbs.	13th day spastic paresis of arms. Flaccid paresis of legs. Retention of urine. No sensory changes.	Progressive motor recovery. Intermittent fever and persistent bed sores. Death 118th day.
1925 Andrew's Committee, Case 5	Female, aged 13	11th day after vaccination	Pain in back, headache, vomiting, rash and paraplegia.	—	Death on 164th day.
1925 Andrew's Committee, Case 42	Male, aged 20	12th day after vaccination	Retention of urine, girdle pain in upper dorsal region. Paresis and loss of sensation below.	Babinski's sign and knee jerks.	Died.

The details of the other two are scanty, probably because they recovered; doubt is thrown on the diagnosis of at least one.

Six other cases have been published by different authors all of which (see Table) have a close similarity to the case here described.

It is, of course, open to argument that the case here described was caused like that of Gayle and Bowen (1933) by typhoid inoculation, but as these authors point out "such complications are certainly rare" and the disease in the cases they review takes the form of a peripheral neuritis, which sometimes extends into the spinal cord and medulla.

Summary

A case of a young man developing fever, muscular pains and unsteadiness of gait 9 days after primary vaccination, followed by a temporary remission and then a sudden paraplegia on the 23rd day is described. During the subsequent 6 months the patient almost completely recovered. The histories of 13 previously published cases of transverse myelitis occurring between the 3rd and 15th day after vaccination are summarized. Cerebral symp-

toms indicative of an accompanying encephalitis only occurred in the acute phase of 3 of these cases and even then were overshadowed by the symptoms related to disease in the spinal cord.

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