recently been detected in the serum of patients with acquired immuno-deficiency syndrome,[11] systemic lupus erythematosis,[12] rheumatoid arthritis[12] and asbestosis[13] and it has been suggested that persistent lymphocyte stimulation due to an immune disorder may lead to high levels of interferon in the serum. Our study, using a reliable immunological assay, suggests that elevated CSF interferon-α concentrations are not present in multiple sclerosis. However, further studies using IRMAs for interferon-γ will allow further insight into the possible role of interferons in the aetiology of multiple sclerosis.

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Treatment of acute myelopathy in systemic lupus erythematosus with plasma exchange and immunosuppression

Sir: Central nervous system involvement occurs in up to 50% of patients with systemic lupus erythematosus (SLE). Happening early or late in the disease, alone or in combination with such manifestations as arthritis, nephritis and cutaneous lesions, it may include generalised epilepsy, disorders of mental function, central disturbances of extra-occular and pupillary innervation, tinnitus and vertigo. Hemiparesis affects about 5% of patients, and transverse myelopathy in SLE has only been reported in thirty cases in the world literature.[2–6] Clinical improvement in the published cases could not be reliably attributed to high dose corticosteroid therapy.[2 9] A slow recovery occurred in only three paraplegic and in one quadriplegic patient from a total of twenty six.[2]

Plasma exchange has been used in diseases where auto-antibodies and/or circulating immune complexes have a demonstrated role in pathogenesis.[10] Examples include myasthenia gravis (anti-acetyl choline receptor antibody),[11] type 1 diabetes mellitus (anti-islet cell antibody),[12] and SLE (anti-double stranded DNA antibody).[13] A good response has been observed in fulminating, steroid-unresponsive SLE, or where cytotoxic drugs were contra-indicated by haematological considerations. Numerous reports of the use of plasma exchange in neurological disorders have been unable to supply firm evidence of efficacy except in certain forms of myasthenia,[14 15] frequently because of the small numbers of patients with rare conditions, as in the case reported below.

A 49-year-old woman was referred in July 1982. She had experienced one week's progressive gait disturbance and impaired manual dexterity, culminating in a 24 hour onset of quadriplegia and acute urinary retention. Five years earlier she had been investigated for polyarthritis affecting the knees and interphalangeal joints. The latex test for rheumatoid disease was negative. Serum anti-nuclear factor titre was 1/1000 and SLE was diagnosed. A year later, a photosensitive skin rash settled spontaneously in a few weeks. She remained well until early 1982 when she again noticed hand and knee stiffness: this responded quickly to phenylbutazone. Soon after, transient attacks of vertical diplopia were reported. Early in July she developed unsteadiness, trembling, tingling sensations in both hands and visual blurring. Romberg's test was positive, but no other abnormality was found. Four days later she was admitted as an emergency, complaining of weakness and clumsiness of both arms and legs, and difficulty in initiating micturition with normal bladder sensation.

Systemic examination revealed facial erythema and telangiectasia with a scaly rash on the arms. The bladder was enlarged. She was well oriented and alert; speech was normal, although the content revealed a high degree of anxiety and repetition, not in keeping with her previous character. No abnormalities were found in the cranial nerves or upper limbs. Walking was impossible owing to an asymmetrical spastic paraparesis, denser on the right. The tendon reflexes were pathologically brisk, with extensor plantar responses. She was initially treated with prednisolone at 60 mg/day, increased after 24 hours to 120 mg/day. After continued deterioration over the next day, she was transferred to Guy's Hospital.

Examination again revealed a high degree of anxiety. She had a spastic tetraparesis greater on the right side. Sensation was impaired up to the C5 level, affecting both light touch and pain; two point discrimination in all fingers was absent, and vibration sense was lost below the tibial tuberosities. A myelogram was normal and CSF examination showed a white cell count of 165/mm^3, mainly polymorphs; the CSF protein concentration was 0·33 g/l. A diagnosis of transverse cervical myelopathy was made.

The first plasma exchange was performed on the night of admission, and in total, eight exchanges were made on alternate days; five litres initially and subsequently four litres of plasma were exchanged using a Haemonetics model 30 machine. Circulatory access was by a 'Vygon' 3·3 mm catheter placed in the left femoral vein; return was via a 14 gauge 'Abbocath' placed in an anticubital vein.

Replacement fluid was physiological saline and a 5% solution of human serum albumin (Armour), in equal proportions. Intravenous methyl prednisolone (Upjohn) 1 g was given for the first six days, changing to oral prednisolone 45 mg/day, subsequently. Azathioprine (Wellcome) 25 mg/kg/day was used throughout and the blood count was monitored. Cimetidine 400 mg bd was given prophyllactically against peptic ulceration.

A striking improvement in the condition of the patient was noted within 24 hours of the first exchange, although anxiety resulting in hyperventilation was a recurring problem, possibly a psychiatric manifestation of the disease. Power in the arms returned symmetrically to MRC 4 or better although the intrinsic hand muscles remained at MRC 3 for a considerable time. She was able to feed herself using thick-handled cutlery after four days.

Blood samples before and during treatment revealed an initially high level of circulating immune complexes, C3 and C4, which quickly returned to normal after initiation of plasmapheresis. (Fig). With intensive physiotherapy, the patient was able to stand after two weeks. Discontinuation of urinary catheterisation was followed by normal bladder function. She was discharged to the care of the referring hospital by mid-August 1982, and was walking slowly, unaided, by December 1982. Almost normal power and fine movement of the hands were reported. Improvement continued and examination in April 1983 demonstrated normal processes and a stable gait. Tone was normal and power was MRC 5 in all muscle groups.

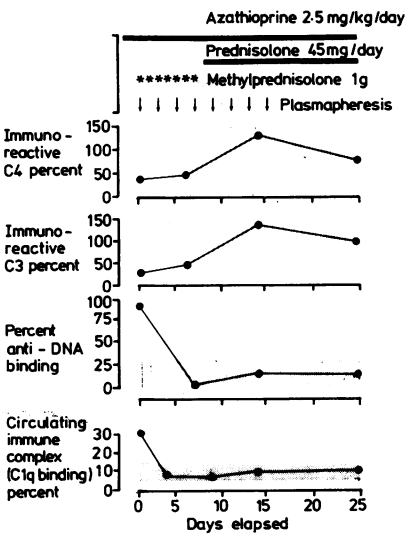

Fig *The variation of serum immune complexes, anti-DNA titre, C3 and C4 levels in relation to the indicated treatment by plasma exchange and immunosuppression. Normal ranges for the laboratory are shown in stipple.*

The rare quadriplegia of acute cervical myelopathy in SLE has been reported at levels C2 and C6,[5] C6[17] and C5[18]; transverse myelopathy at a lower level causing paraperisis is slightly more common. Rapid evolution of the paresis with sensory impairment below the affected level is typical.[3] Sphincter function is affected in the majority of cases. A range of pathological lesions has been demonstrated postmortem, from widespread infarction of the cord to much smaller areas of necrosis.[2] In a few cases, gross cord damage occurred in the absence of vascular abnormalities; however, thrombosed arteries and veins have been observed in relation to microscopic haemorrhages.[8] Some small arteries showed inflammatory cell infiltrates and fibrinoid necrosis within their walls. In contrast, other vessels had much less florid stigmata of an immune complex vasculitis: changes included peri-vascular inflammatory cell aggregation and peri-capillary microglial proliferation.[7] The severity of an attack of SLE is not strictly paralleled by the level of circulating immune complexes, nor is recovery always commensurate with a reduction in that level. In the described case, the fall in concentration of immune complexes, and the observed deranged levels of C3 and C4 were, as reported elsewhere,[16] compatible with a vasculitic process.

In cases where a typical vasculitis is not a feature, an alternative mechanism of pathogenesis by antibody mediated cytotoxicity might be operating. Neurocytotoxic antibodies have been found in the serum of SLE patients.[19] These may form following the release of neurological tissue antigens from already disrupted CNS tissues. Alternatively, crossreactive antibodies may be formed elsewhere and subsequently penetrate the CNS to instigate damage. The latter hypothesis is supported by animal experiments where antibodies to nervous tissue, when injected into a normal recipient, resulted in CNS lesions.[20] Access of protein molecules to the CNS involving passage across the blood-brain barrier has also been demonstrated experimentally, by vesicular transport.[21 22] Relevant autoantibody specificities so far identified in SLE include those of neuroglia,[23] glycolipids,[24] and an antigen shared by brain tissue and the lymphocyte surface.[25 26] More recently, anti-cardiolipin and anti-sphingomyelin specificities have been reported in a patient suffering from a lupus-like syndrome.[27]

Poor response to plasma exchange or rebound after therapy may be explained by re-equilibration and release into the circulation of neurocytotoxic antibodies from sequestered complexes. Also, renewed autoantibody synthesis could be expected to prolong the disease process without adequate immune suppression.

Whatever the precise mechanism, the use of sequential plasma exhange and continual immune suppression now appears to have a place in steroid-unresponsive SLE. If it is to be used it should be started early, particularly in the presence of neurological complications such as those described here, previously associated with permanent paralysis or death.

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Familial hypoplasia of the thenar eminence: a report of three cases

Sir: Some individuals are born without certain muscles.[1] These variations of the musculature are most often sporadic but hereditary absence of muscles has been reported.[2–5] The pattern of inheritance in these families has been described as autosomal dominant. Congenital hypoplasia or absence of the thenar muscles is rare and only four sporadic cases have been reported.[6–9] The purpose of this letter is to report three cases from two generations of a family presenting congenital hypoplasia of the thenar eminence. In addition two of the cases had no extensor pollicis longus muscles.

Case 1 was a 28-year-old man, referred to the department of neurology because of a left common peroneal nerve palsy which recovered during the following months. Since childhood bilateral hypoplasia of the thenar eminences had been noticed but apart from this there had never been any symptoms or signs of neuromuscular disease until the peroneal nerve palsy. A pronounced bilateral hypoplasia of the thenar eminence was found, with almost complete absence of the abductor pollicis brevis muscles (fig). In addition the extensor pollicis longus muscles were absent on both sides. Sensation, vibration and position sense of the hands was normal as was the rest of the neurological examination. Hand radiographs showed moderately hypoplastic scaphoid bones.

Case 2 was a 27-year-old woman, the sister of case 1, who since childhood had noticed hypoplasia of the thenar eminences. There had been no other symptoms or signs of

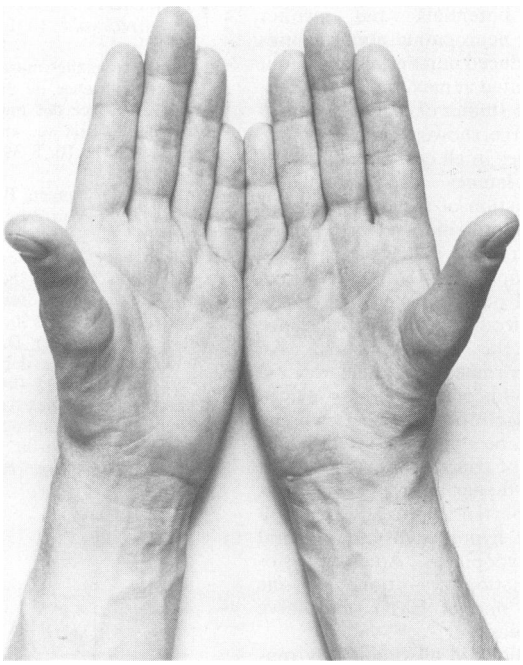

Fig *Case 1, showing hypoplasia of both thenar eminences.*