



Individual miotic responses for patients and controls.

two. The mean (SD) change in pupillary diameter (miosis) was 0.28 (0.6) mm for controls and 1.28 (0.7) mm for patients. Pupillary constriction of at least 0.5 mm was found in five control subjects, whereas 25 of the patients had pupillary constriction of at least 0.5 mm (figure;  $p < 0.0001$ ). No difference was found between the two groups in postural fall in systolic blood pressure, although one control subject had a fall of 30 mm Hg and also a pupillary constriction of 3 mm. These results show increased sensitivity to pilocarpine in patients with Alzheimer's disease, and suggest cholinergic dysfunction somewhere in the parasympathetic pathway to the iris. The pupillary response to dilute parasympathetic agents is a useful method of studying the integrity of cholinergic neurons of the ciliary ganglion in conditions such as Adie's syndrome.<sup>4</sup>

Studies of supersensitivity of the iris to cholinergic agents have shown that it can also occur with preganglionic lesions,<sup>5</sup> so that it is possible that a cholinergic abnormality of pupil innervation in Alzheimer's disease could be central and not at the ciliary ganglion. It is of interest that none of these patients had postural hypotension, which could have indicated autonomic failure. In the present study no evidence was forthcoming from control subjects that a parasympathetic dysfunction of the iris in Alzheimer's disease could be due to age.

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### Rheumatic chorea and lupus anticoagulant

Two patients were diagnosed as Sydenham's chorea out of 322 patients seen in our movement disorder clinic in 1991-3. Both had lupus anticoagulant.

Patient 1 was a 15 year old girl who had had three attacks of generalised chorea within two years. The first attack occurred a month after a pharyngitis episode; it was the most severe and the longest, lasting five months. Because the choreoathetotic hyperkinetic movements were severe and only slightly improved by sodium valproate (1500 mg daily) and haloperidol (3 mg daily), corticosteroid treatment was required for two months (prednisone, initial dosage 40 mg daily). She had a history of asthma, which was treated with cromoglycate, and frequent episodes of pharyngitis. There was no other relevant personal or family history. Her physical examination was normal. Laboratory investigations showed an antistreptolysin-O titre between 300 and 621 Todd units (normal <250). Several determinations of activated partial thromboplastin time during the first attack of chorea showed prolonged values (57 sec; control 32.5 sec), not corrected by the addition of normal plasma. In the two subsequent relapses of chorea only a slight prolongation of the activated partial thromboplastin time was detected. Anticardiolipin IgG antibodies ranged between 6.9 and 19 U GPL/ml (normal, <15). Anticardiolipin IgM antibody concentrations were normal. Brain MRI showed a slight asymmetry of the frontal horns of the lateral ventricles, but there was neither change of signal nor gadolinium enhancement. Since February 1993, she has remained asymptomatic, just receiving prophylactic treatment with intramuscular penicillin.

Patient 2 was a 12 year old girl who presented with mild generalised chorea in July 1992. No other neurological or systemic abnormalities were seen. One year earlier she had had a pharyngitis episode followed by fever and migratory polyarthritis. There was a family history of rheumatic fever without chorea. Laboratory investigations showed antistreptolysin-O titres between 300 and 460 Todd units, and prolonged activated partial thromboplastin time (39 sec; control 30 sec) not corrected by the addition of normal plasma. Anticardiolipin antibody concentrations were normal. Brain MRI was normal. The patient was treated with sodium valproate (1000 mg daily) and prophylactic intramuscular penicillin, and the choreic movements disappeared within the next few months. Although an increased titre of antistreptolysin-O antibody is still present, subsequent coagulation studies have been normal.

Extensive investigations showed no other abnormalities in either case. Thus two patients with rheumatic chorea and prolonged activated partial thromboplastin time are reported. Although more specific coagulation tests were not done, lupus anticoagulant is the most probable explanation for the increased activated partial thromboplastin time detected in both cases. In patient 1, a high titre of anticardiolipin IgG antibodies was also detected.

Rheumatic fever and systemic lupus erythematosus are two known causes of immunologically mediated chorea, and lupus anticoagulant seems to represent the

main biochemical abnormality responsible for chorea in systemic lupus erythematosus. Although lupus anticoagulant has been associated with chorea gravidarum,<sup>2</sup> and anticardiolipin antibodies with rheumatic fever,<sup>3</sup> to our knowledge, lupus anticoagulant had not been reported in patients with rheumatic chorea.

Although little is known about the role of antiphospholipid antibodies, anticardiolipin antibodies seem to be unrelated to the rheumatic chorea pathogenesis.<sup>3,4</sup> Different protein fractions responsible for lupus anticoagulant and anticardiolipin antibodies have however, been isolated.<sup>5</sup> Therefore, the antineuronal antibodies responsible for rheumatic chorea could be more related to lupus anticoagulant than to anticardiolipin antibodies.

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### Acute peripheral neuropathy, rhabdomyolysis, and severe lactic acidosis associated with 3243 A to G mitochondrial DNA mutation

Neuropathy can be a complication of progressive external ophthalmoplegia, but is rare in mitochondrial myopathy, encephalopathy, lactic acidosis, and stroke-like episodes (MELAS). We report here a case of mitochondrial cytopathy with these unusual manifestations.

The patient is a 33 year old woman who had a normal birth and early development. When she was aged 30, after the stillbirth of her first child, she developed spontaneously remitting myalgia of her thigh muscles. At the age of 32 she had intermittent headaches and nausea after physical work. At the age of 33, during her second pregnancy, she felt numbness in her toes and weakness in her legs, which spread to all four extremities over three weeks. She also developed facial weakness. Simultaneously, intrauterine fetal death occurred and abortion had to be induced. By that time she was too weak to walk. She was diagnosed as having Guillain-Barré syndrome and was given betamethasone (8 mg/day) for two days. This was not effective, and she was transferred to our hospital.

Examination on admission on 16 October 1991 showed average height and