Total extrinsic ophthalmoplegia as only paraneoplastic sign two years before X-ray diagnosis of bronchial carcinoma

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An extrinsic total ophthalmoplegia developing two years before radiologic evidence of bronchial carcinoma and onset of Eaton-Lambert myasthenic syndrome is reported. Clinical and ENG data showed the neuromuscular location of the ophthalmoplegia, but repeated Tensilon and Prostigmine tests were negative. CT scan and CSF examinations revealed neither carcinomatous metastases nor inflammatory CNS disease. The case is an exceptional example of a paraneoplastic myasthenic syndrome long confined to the oculomotor muscles.

Key-Words: Eaton-Lambert myasthenic syndrome (ELS) — progressive external ophthalmoplegia (PEO) — paraneoplastic syndrome

Introduction

ELS or weakness of the proximal muscles of the limbs [1, 2] rarely occurs as an isolated disorder and more frequently in association with malignant tumors, especially oat-cell bronchial carcinoma [2, 7]. Although subclinical neuromuscular ocular involvement may occur in this syndrome, true ophthalmoplegia is exceptional [2]. We observed this phenomenon two years before the onset of typical ELS.

Case report

A 60-year-old man had horizontal diplopia on lateral gaze when he was watching a football match on 20/3/82. He had smoked heavily since the age of 20 (30-40 cigarettes daily), had brucellosis at 30 and had undergone gastric resection for peptic ulcer with cholecystectomy at the age of 50.

In April 1982 an ophthalmologist found decreased convergence and slight impairment of upward movement bilaterally. On 13/5/82 the patient was admitted to our Neurological Clinic because of a worsening of the oculomotor disability. General physical examination was negative and mental status normal. Neuro-ophthalmological examination showed a visual acuity of 20/20 in both eyes with normal color vision. The visual fields were normal bilaterally, with normal blind spots. The pupils were 4 mm in diameter and were equal and reactive to light and accommodation; no pupillary defect was seen. The palpebral fissures were 10 mm in both eyes. Convergence was decreased bilaterally; no Bell's phenomenon was present. Pursuit was smooth, saccadic movements were slow horizontally and vertically, and ocular mobility was not increased on the doll's head maneuver. Supraduction was 60 per cent of normal, infraduction 80 per cent; abduction was 80 per cent in the left eye and 70 per
cent in the right eye, and adduction was 90 per cent in the left eye and 60 per cent in the right eye. Optokinetic nystagmus was normal. No exophthalmos or ptosis was observed. The optic fundi were normal, as were the remaining cranial nerves. The extremities appeared slightly hypotonic without atrophy or weakness. There was weakness of shoulder abduction on the right side, and questionably on the left side. The tendon reflexes were brisk and equal and ankle jerks increased; the plantar responses were flexor. Coordination and sensation were normal. The Romberg test was negative. Gait was normal.

Routine urine and blood examinations were within normal limits except for hyperuricemia (8.3 mg/100 ml) and a type IIb hyperlipemia. The serum B12 vitamin level was 454 (nv 200-950 µg/ml), and folic acid was 3.2 (nv 3-17 ng/ml). X-ray films of the chest, skull and spine, ECG, EEG, Doppler scans of the neck vessels and an isotope scan of the brain were all normal. The Tensilon test was negative and antimuscle antibodies were absent.

The patient was discharged ten days later. His oculomotor abnormalities persisted unchanged for 18 months. He was readmitted on 19/10/83 because of gradual deterioration (Fig. 1). The patient had grown thin and had telangiectasias on his cheeks. Chest X-ray was still normal (Fig. 2 a.). A CT scan of the brain with contrast was normal. Glucose tolerance test and insulinemic curve were normal. Lumbar puncture showed clear, colorless cerebrospinal fluid under normal pressure and contained 2 WBC/mm³, glucose 68 mg/100 ml, and protein 49 mg/100 ml; Link's Index was 0.48 (nv up to 0.50 in our laboratory), and electrophoresis showed no banding in the IgG fraction.

Ordinary electromyographic examination disclosed no active denervation or primary muscle disease in arm or leg muscles. The results of repetitive stimulation tests (orbicularis oculi, deltoid and abductor digiti minimi muscles) were normal.

An electronystagmographic examination (Fig. 3) showed that the saccadic movements were absent horizontally and vertically, and that slow saccadic-like movements had taken the place of smooth pursuit movements. The rapid phase of optokinetic nystagmus was absent. No spontaneous or evoked (Frenzel) nystagmus and no pathological nystagmus on bilateral caloric stimulation were found. A test with Prostigmine was negative, as well as a control Tensilon test. The patient was discharged with the presumptive diagnosis of progressive external ophthalmoplegia without ptosis one month later.

In June 1984 cough appeared, and in the two following months the patient noted muscular weakness while walking, and noteworthy weight loss. The face telangiectasias were very marked. Chest X-ray film early in August 1984 (Fig. 2 b) showed a solid lesion in the lower lobe of the left lung, which bronchoscopy with biopsy revealed to be an oat-cell carcinoma. At that time almost no voluntary ocular movement was possible, and there was no ptosis. A CT brain scan with injection of contrast showed no intracranial metastases and normal brainstem, and a total