Short report

Gold encephalopathy

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SUMMARY Encephalopathy is described developing in a 42 year old man who was receiving gold treatment for rheumatoid arthritis.

Complications of chrysotherapy are well known hazards in the treatment of rheumatoid disease. We report a case in which an encephalopathy developed after sodium aurothiomalate (Myocrisin) treatment, and describe the subsequent recovery of the patient.

Case history

A previously fit 42 year old man developed typical features of rheumatoid arthritis in 1972. After failure of indomethacin to give relief from a relapse, he received on 5 April 1974 an intramuscular test dose of sodium aurothiomalate (Myocrisin) 5 mg, followed by regular weekly injections of 10 mg, and later 15 mg. The indomethacin was stopped on 16 August 1974.

On 28 August he complained of generalised aching and headaches of increasing severity. Two days later he became confused and by 15 September, just before admission to hospital, was walking aimlessly around his home, disorientated, and recognising neither wife nor children. He had received a total of 130 mg of sodium aurothiomalate.

On admission to hospital, he was afebrile and had no meningism. The sole neurological abnormalities noted were confusion and an extensor left plantar response. There was no clinical evidence of active rheumatoid disease. Haemoglobin and ESR were normal; WBC was 9.0×10^9 cells/l with 5% eosinophils, rising the next day to 12×10^9 cells/l with 31% eosinophils. The CSF contained 0.75 g/l protein with no pleocytosis.

On transfer to the Middlesex Hospital five days later, he was drowsy, apathetic, and disorientated with a marked impairment of recent memory. He was unable to name his family or address, attempt the Babcock sentence, or perform simple calculation. There was no dysphasia. Fundoscopy was

normal. The left plantar response remained extensor, the right being equivocal. Gait was slow and unsteady.

Eosinophilia persisted at 15% of 12×10^9 cells/l. Serum electrolytes, liver function tests, protein electrophoresis, immunoglobulin levels, and 24 hour creatinine clearance were normal. Serum ANF was not detected and VDRL was negative. Latex test and sheep cell agglutination titre were both positive, the latter in a titre of 1:512. The CSF contained no cells, but a protein content of 1.75 g/l was noted, rising to 2.12 g/l one week later. Radioisotope brain scan was normal. The EEG showed a severe generalised abnormality with additional predominantly frontal intermittent high amplitude delta activity. CSF and urine gold estimations showed low levels of less than 10 µg/l. Lymphocyte transformation was normal to standard mitogens, but failed to show evidence of hypersensitivity when challenged with gold.

The patient was considered to have a gold-induced encephalopathy, and was treated with oral prednisolone 30 mg and penicillamine 1 gram daily. The eosinophilia resolved after three days of treatment and steady clinical recovery occurred over the next three weeks, paralleled by improvement in the EEG.

One month later he was well and able to return to work. There were no residual neurological signs and the CSF protein level had fallen to 0.60 g/l. Treatment was withdrawn, and he remains well.

Discussion

Severe side effects are said to occur in about 4.5% of patients treated with gold (Freyberg, 1972). Toxicity occurs without relation to total dose, or to serum or urine levels when standard doses are used. Although serum IgE and eosinophil counts may predict the onset of toxicity, this is not invariable (British Medical Journal, 1975).

The most commonly held view is that gold

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toxicity is due to immunological hypersensitivity, and this may be associated with positive lymphocyte transformation (Denman and Denman, 1968). Whatever the pathogenesis, steroid therapy rapidly suppresses the toxic manifestations, although not altering the rate of excretion. This, however, may be increased by penicillamine.

The rare neurological effects of chrysotherapy include fits, transverse myelitis, cranial nerve palsies, Guillain-Barré type syndrome, and symmetrical peripheral neuropathy. Psychiatric disturbance and confusion have also been noted (Walsh, 1970). Occasional cases with some evidence of encephalopathy are reported in the French literature (Endtz, 1958).

There seems no doubt that our patient suffered a generalised encephalopathic illness related to the administration of gold, although direct evidence for sensitisation was not shown. We are

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unable to say whether our treatment influenced the course of his illness.

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