Coincident cytomegalovirus infection and toxoplasmosis in an uncompromised host

Simultaneous infection by the obligate intracellular parasite *Toxoplasma gondii* and by cytomegalovirus has been described in stillborn infants with congenitally acquired disease and occurs with an unexpected frequency in patients with disseminated neoplasia. Under normal circumstances it is uncommon for either agent to cause overt disease, and coincident infection with *T gondii* and cytomegalovirus does not appear to have been described in an otherwise healthy adult. I present a case of atypical mononucleosis accompanied by serological evidence of infection with both agents.

**Case report**

A 71-year-old Welsh hill farmer was admitted three weeks after the onset of chills, lassitude, anorexia, occasional vomiting, and episodes of irrational behaviour. Apart from fever of 38°C there were no abnormal physical signs. Haemoglobin concentration was 13.8 g/dl with normal blood variables. Serum sodium and potassium were low at less than 131 mmol/l (normal 135-145) and 3.2 mmol/l (normal 3.5-5.0) respectively; urea concentration was 9.4 mmol/l (normal 2.0-7.0) and aspartate transaminase activity 46 IU/l (normal 10-35). Serum proteins and bilirubin concentrations and alkaline phosphatase activity were normal, and urine analysis and chest radiography showed no abnormalities. He remained febrile and became confused, enfeebled, and incontinent of urine. Further tests indicated inappropriate secretion of antidiuretic hormone and he became increasingly withdrawn.

Ten days after admission he had fine inspiratory crepitations in both upper zones, absent knee and ankle reflexes, and extensor plantar responses and had lost 5 kg in weight. Lumbar puncture showed normal cerebrospinal fluid. Erythrocyte sedimentation rate was 62 mm in the first hour; white cell count was 15.5 x 10^9/l with 57% polymorphs and 40% lymphocytes, and atypical lymphocytes and myelocytes were seen on the film. A Paul-Bunnell test result was negative, and a sternal marrow aspirate suggested a myelomonocytic leukaemia. Results of liver function tests showed a further rise in aspartate transaminase activity to 56 IU/l, a bilirubin concentration of 16 μmol/l (0.93 mg/100 ml) (normal 1-15 μmol/l); 0.05-0.87 mg/100 ml) and an alkaline phosphatase activity of 162 KAU (normal 4-13 KAU). An ultrasound scan of the liver was normal, a liver biopsy specimen showed a mild non-specific hepatitis, and an iliac trephine biopsy specimen showed no evidence of malignancy.

The cytomegalovirus complement fixation test showed a 64-fold rise in antibody titre from 1/16 to 1/1024, and the titre of cytomegalovirus IgM rose from <1/4 to 1/128. This was accompanied by an eightfold rise of antibody to toxoplasma dye test from 1/128 to 1/1024, and the titre of toxoplasma IgM rose from <1/4 to 1/32. A search for other infections gave negative results.

The fever remitted two weeks after admission, but he remained unwell and was given a 10-day course of co-trimoxazole followed by 1 g sulphadiazine four times daily on confirmation of the diagnosis of toxoplasmosis. He began to improve after two weeks of treatment. Several months later he returned to his farming activities, and he remained well 12 months after discharge.

**Comment**

The nature of the infections in this patient, suggested by the atypical mononucleosis and a negative Paul-Bunnell test, were confirmed by finding a 64-fold rise in the serum complement fixation titre to cytomegalovirus, an eightfold rise in antibody in the toxoplasma dye test, and appreciable rises in the IgM titres to both cytomegalovirus and *T gondii*. Toxoplasmosis and cytomegalovirus infection may be impossible to distinguish clinically, and the high incidence of subclinical infections caused by these pathogens suggests that concurrent infections occur more often than has hitherto been recognised. Although unproved by controlled clinical trials in man, a combination of pyrimethamine and sulphonamides seems to be the most effective in the treatment of toxoplasmosis, especially in immunocompromised patients in whom the diagnosis is established promptly. Thus it is important to remember that concurrent infections may occur, as in the present case, and that a proved viral infection does not exclude the possibility of an associated treatable infection with *T gondii*.

I gratefully acknowledge the helpful advice of Dr J M Gumpel, under whose care the patient was admitted, and Dr P J Sanderson, Northwick Park Hospital; Professor H Stern, department of virology St George's Hospital; and Dr D G Fleck, public health laboratory, St George's Hospital, in whose laboratories the serological studies were performed.

their routine follow-up at some time in the near future. One patient in the study was noted as having had symptoms for two months before her recurrent disease was detected at a routine attendance. She had not reported these symptoms because she was prepared to wait until she attended the clinic.

Most general practitioners are aware that their patients are often unhappy with their routine consultations in the surgical outpatient department. Not only are the hospital waiting rooms overcrowded but also the consultation is usually cursory and is often undertaken by the most junior member of the hospital team. The examining doctor may never have seen the patient before, and it is not uncommon for a patient to be given conflicting advice on consecutive visits because she has been seen by different doctors.

The resources of our health service are finite, and if our figures are representative of the United Kingdom as a whole then the time of the surgical team might be more usefully spent elsewhere.

We thank the surgeons and the staff of the records department of the County Hospital, Hereford, for their help.


(Accepted 30 March 1981)

Much Birch, Hereford
P B CLARK, MB, MRCP, general practitioner
County Hospital, Hereford
D L MORRIS, MB, FRCS, surgical registrar

Red cell indices and iron stores in patients undergoing haemodialysis

Serum ferritin concentrations correlate well with iron stores in patients with chronic renal failure. 1, 2 It has been suggested that the red cell indices, mean cell haemoglobin (MCH) and volume (MCV), are also correlated with serum ferritin concentrations. 3 MCH and MCV are easier to measure than the serum ferritin concentration and therefore we have examined their value in detecting lack of iron and predicting response to iron treatment in patients undergoing haemodialysis.

Patients, methods, and results

A total of 131 patients (82 men, 49 women) either training for or undergoing home haemodialysis were studied. Their mean age was 44.6 years (range 14-68) and the mean time on dialysis was 42 months (range 1-152). The patients underwent dialysis for 10 hours twice weekly using Meltec Maxi multipoint dialysers (surface area 1.0 m 2). Other details of management are published elsewhere. 2 Serum ferritin concentration was measured using a radioimmunoassay method (GammaDab, Clinical Assays). The normal ranges were: men 25-150 μg/l; women 15-80 μg/l; and values in iron deficiency anaemia were <10 μg/l. An excellent correlation was shown between serum ferritin concentration and bone marrow stainable iron in 32 of our patients. Haemoglobin concentration, MCV, and MCH were determined using a Coulter S counter. All values for serum ferritin were log transformed for statistical analysis.

In the whole population the mean value for MCH was 29.8 pg (range 19.3 to 36.9) and for MCV 91 fl (range 65-107). There was a significant correlation between MCH and serum ferritin concentration (r=0.550, n=131, p<0.001; regression equation—log ferritin=0.121 MCH−1.288). The relation between MCV and serum ferritin concentration was similar (r=0.529, n=131, p<0.001; regression equation—log ferritin=0.046 MCV−1.854).

The change in haemoglobin concentration after parenteral iron treatment with 1-15 g of iron dextran was monitored in 31 patients with stable haemoglobin concentrations. They received no blood transfusions and suffered no extraordinary blood loss during the study. An increase in haemoglobin concentration of at least 1 g/dl, measured four to six weeks after treatment and maintained thereafter, was regarded as an indication of response to iron. A mean increase in haemoglobin concentration of 2.5 g/dl (range 1.0-4.2) occurred in 18 patients. The association between MCH-MCV and serum ferritin concentration in the treated patients (r=0.616 and r=0.568; p<0.001 respectively) was similar to that observed in the entire population under study. The relations between serum ferritin concentration and pretreatment MCH and MCV in the patients receiving parenteral iron treatment are shown in the figure.

Comment

Both MCH and MCV are positively correlated with serum ferritin concentration, and hence with iron stores, as has been previously shown. 4 We showed earlier 1 that iron treatment was likely to increase haemoglobin concentration (>1 g/dl) in patients undergoing haemodialysis with serum ferritin concentrations of up to 55 μg/l. The data presented here indicate that low MCH or MCV values may be used to confirm iron deficiency. Of the 18 patients who responded to iron treatment, however, 12 had MCH concentrations and 15 MCV concentrations within the respective normal ranges. Therefore neither MCH nor MCV is a reliable indicator of iron deficiency or of response to iron treatment in patients undergoing haemodialysis.


(Accepted 13 March 1981)

Departments of Medicine and Haematology, Charing Cross Hospital Medical School, London W6 8RF
K L LYNN, FRCP, senior registrar in medicine (present appointment: nephrologist, department of nephrology, Christchurch Hospital, Christchurch, New Zealand)
T R MITCHELL, MRCPATH, senior lecturer in haematology
J SHEPPERD, FILMS, chief medical laboratory scientific officer