T cell lymphotropic virus type III antibodies; filaria and schistosomal enzyme linked immunosorbent assay; testing of stools for ova and parasites; tests of liver function and autoantibodies; chest radiography; and abdominal ultrasound. Immunoglobulin concentrations were normal apart from a slightly raised IgM. Skin biopsies on admission showed focal parakeratosis with acanthosis of the epidermis, in which numerous convoluted lymphocytes were identified. A repeat skin biopsy taken three weeks later when the skin had improved showed a perivascular lymphocytic infiltrate. Biopsy of the lymph nodes was consistent with a dermatopathic lymphadenitis.

The erythroderma improved, but the patient still required 5 mg prednisolone on alternate days and a moderately potent (group III) topical steroid cream five months after onset of illness.

Comment

From 1982 to 1985 between 109 000 and 156 000 people were exposed to Fansidar in the United States. Twenty severe cutaneous reactions (erythema multiforme, Stevens-Johnson syndrome, and toxic epidermal necrolysis) have been documented, 19 of which occurred in people using chloroquine simultaneously. Six of these reactions were fatal. These reactions were associated with multiple (two to five) doses of Fansidar only when used as weekly prophylaxis, and none of the serious reactions were associated with treatment with single doses of Fansidar, as used to treat malaria.[3]

Plasmodium falciparum resistant to chloroquine is an increasing problem in malarial areas. Fansidar[4] has been widely recommended for prophylaxis, but awareness of its potentially serious side effects has grown, and the combination of Fansidar with chloroquine, as in our patient, seems particularly liable to cause serious reactions.[5]

We thank Dr F Allenby (consultant dermatologist, Lister Hospital, Stevenage) for referring the patient and Dr J Thompson (chef de clinique, Academisch Ziekenhuis, Leiden, Holland). We acknowledge the help and advice of Dr A Bryceson (Hospital for Tropical Diseases, London) and Dr P W M Copeman (consultant dermatologist, St Stephen's Hospital, London).

1 Olsen VV, Loft S, Christensen KD. Serious reactions during malaria prophylaxis with pyrimethamine-sulfadoxine. *Lancet* 1982;ii:994.
2 Selby CD, Ladusans EJ, Smith PG. Fatal multisystemic toxicity associated with prophylaxis with pyrimethamine and sulfadoxine (Fansidar). *Br Med J* 1985;**290**:113-4.
3 Communicable Disease Surveillance Centre. Revised recommendations for preventing malaria in travellers to areas with chloroquine-resistant plasmodium falciparum. *MMWR* 1985;**34**:185-90.
4 Schwartz IK, Campbell CC. Indications for the use of Fansidar in malaria. *N Engl J Med* 1982;**307**:194.
5 Bradley DJ, Hall AP, Peters W, Warhurst D. Fansidar in malaria prophylaxis. *Br Med J* 1985;**291**:136.

(Accepted 28 February 1986)

Daniel Turner Skin Department, St Stephen's Hospital, Chelsea, London SW10 9TH
J A A LANGTRY, MB, MRCP, senior house officer in dermatology
J I HARPER, MD, MRCP, senior registrar in dermatology
R C D STAUGHTON, MA, MRCP, consultant dermatologist

Lister Hospital, Stevenage, Herts
P BARRINGTON, BM, senior house officer in medicine

Correspondence to: Dr Langtry.

Toxoplasmosis in cardiac transplantation

Despite new immunosuppressive regimens infections with opportunistic organisms still constitute an important threat to patients undergoing organ transplantation. *Toxoplasma gondii* may cause fulminant and rapidly fatal infection in recipients of heart transplants.[1] We report the prevalence of infection with *T gondii* in recipients of heart transplants at Papworth Hospital, the role of the donated hearts as a source of infection, successful treatment of fulminant infections, and the role of pyrimethamine in prophylaxis.

Patients, methods, and results

Altogether 119 patients who had received cardiac or cardiopulmonary transplants were reviewed (106 men, 13 women; age range 9-54 (mean 38·6) years). Seventeen patients received conventional immunosuppression with azathioprine and steroids; cyclosporin A was used with low dose steroids in 80 patients and with azathioprine in 22. All patients received a short course of intravenous antithymocyte globulin.

Infection due to *T gondii* was diagnosed if a fourfold or greater rise in the latex agglutination antibody titre was confirmed by a similar rise in dye test titres or the finding of cysts of *T gondii* in myocardial biopsy specimens, or both.[2] The postoperative follow up period ranged from three to 72 months. Patients who developed infection with *T gondii* were treated with oral pyrimethamine 25 mg twice daily and spiramycin 1 g twice daily. In addition, sulphadiazine 1 g was given initially four times daily intravenously and replaced later with a mixture of three sulphonamides (Sulphatriad: sulphadiazine 185 mg, sulphamerazine 130 mg, and sulphathiazole 185 mg; May and Baker Ltd) three times daily. After the acute phase of the illness treatment continued with pyrimethamine and Sulphatriad for 10-12 months. As our initial experience showed that infection with *T gondii* was most likely to occur in seronegative recipients of hearts from seropositive donors we later used pyrimethamine for prophylaxis in this group.[3] Pyrimethamine was administered as a single daily dose of 25 mg for six weeks postoperatively.

Results in seronegative recipients of hearts from seropositive donors (n=14)—Early in the series seven patients did not receive prophylactic pyrimethamine. Four of these developed clinically overt infections with *T gondii* 20-32 days after transplantation (mean 26 days). Two patients died, but the two others were successfully treated. In these four patients cysts were seen in the myocardium on biopsy in three patients and at necropsy in one. Of the patients who developed toxoplasmosis, one was given conventional immunosuppression and three cyclosporin A. Later in the series seven patients received pyrimethamine as prophylaxis; none developed primary infection with *T gondii*.

Results in seronegative recipients of hearts from seronegative donors (n=66)—None of these patients developed toxoplasmosis.

Results in seropositive recipients (n=39)—One patient developed a clinically mild reactivated form of infection with *T gondii* with an appreciable rise in antibody titres. He was treated successfully.

Comment

We believe that our success in managing patients with disseminated toxoplasmosis was due to early diagnosis and treatment. The use of spiramycin in addition to conventional treatment with pyrimethamine and sulphonamides may also have contributed. Cyclosporin A inhibits replication of *T gondii* in vitro at high concentrations.[4] Conceivably, therefore, the peak concentrations in the blood and tissues may exert an antitoxoplasma effect in vivo.[5]

Because primary toxoplasmosis occurred only in the "mismatch" group, in which seronegative patients received hearts from seropositive donors, we consider that the presence of *T gondii* antibody in a donor indicates the probable presence of *T gondii* cysts in the donor's heart. To identify this high risk group it is necessary to screen both recipients and donors for *T gondii* antibody. The ideal would then be to ensure that organs from seropositive donors are not transplanted into seronegative recipients. This, however, is not practicable. Our preliminary experience with prophylaxis with pyrimethamine suggests that it confers considerable benefit, although more data are required to reach a firm conclusion at conventional levels of significance.

1 Ryning FW, McLeod R, Maddox JC, Hunt S, Remington J. Probable transmission of Toxoplasma gondii by organ transplantation. *Ann Intern Med* 1979;**90**:47-9.
2 Balfour AH, Fleck DG, Hughes HPA, Sharp D. Comparative study of three tests (dye test, indirect haemagglutination tests, latex agglutination test) for the detection of antibodies to Toxoplasma gondii in human sera. *J Clin Pathol* 1982;**35**:228-32.
3 Hakim M, Wreghitt TG, English TAH, Stovin PGI, Cory-Pearce R, Wallwork J. Significance of donor transmitted disease in cardiac transplantation. *Journal of Heart Transplantation* 1985;iv: 302-6.
4 Mack DG, McLeod R. New micromethod to study the effects of antimicrobial agents on Toxoplasma gondii: comparison of sulphadoxine and sulphadiazine individually and in combination with pyrimethamine and study of clindamycin, metronidazole and cyclosporin A. *Antimicrob Agents Chemother* 1984;**26**:26-30.
5 Kahan BD. Individualization of cyclosporin therapy using pharmacokinetic and pharmacodynamic parameters. *Transplantation* 1985;**40**:457-76.

(Accepted 19 February 1986)

Department of Cardiothoracic Surgery, Papworth Hospital, Cambridge CB3 8RE
M HAKIM, FRCS, MRCP, registrar in cardiothoracic surgery
D ESMORE, FRACS, FRCSED, senior registrar in cardiothoracic surgery
J WALLWORK, BSC, FRCS, consultant cardiothoracic surgeon
T A H ENGLISH, BSC, FRCS, consultant cardiothoracic surgeon

Public Health Laboratory, Addenbrooke's Hospital, Cambridge CB3 8RE
T WREGHITT, PHD, MRCPATH, principal microbiologist

Correspondence to: Mr Hakim.