Oral trimethoprim-sulfamethoxazole in the treatment of cerebral toxoplasmosis in AIDS patients — a prospective study

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Toxoplasma encephalitis is the commonest cause of intracranial mass lesions in AIDS patients. Effective therapy includes pyrimethamine plus sulfadiazine, clindamycin with pyrimethamine, and co-trimoxazole. This study examines the efficacy of oral co-trimoxazole in 20 AIDS patients with toxoplasmosis and seeks to confirm the experience of Torre *et al*.

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Toxoplasmosis is the most frequent cause of focal cerebral lesions in patients with AIDS.[1] Current therapy for acute cerebral toxoplasmosis is a combination of pyrimethamine plus sulfadiazine.[2] Alternative agents include clindamycin, clarithromycin and azithromycin.[3,4] In addition to the significant adverse effect profile of the pryimethamine combination, necessitating folinic acid replacement, none of these agents is available in intravenous form in most public service hospitals within the province of KwaZulu-Natal. The combination of trimethoprim-sulfamethoxazole (co-trimoxazole) has been shown to possess antitoxoplasmic activity *in vitro*[3] and *in vivo*.[5,6] The latter study,[6] a retrospective appraisal of intravenous therapy, showed a favourable outcome in 87% of treated patients. The aim of the present study was to prospectively evaluate the efficacy of oral co-trimoxazole in acute cerebral toxoplasmosis.

Methods

HIV-positive patients referred to the neurology unit with radiological lesions suggestive of toxoplasmosis (multiple lesions with rim enhancement, basal ganglia location, extensive surrounding oedema) were entered into the study. Computed tomography (CT) scans were performed on admission, before commencing therapy. Repeat scans were done 2 - 4 weeks later, except when neurological deterioration necessitated an earlier scan. Patients qualifying for entry into the study were treated with trimethoprim-sulfamethoxazole (co-trimoxazole 80 mg and 400 mg respectively). An induction dose of 2 tablets 4 times daily for 1 month was followed by 2 tablets 12-hourly for life in the absence of antiretroviral therapy and a CD4 count below 200 cells/µl. This dose is comparable with the international literature which cites doses of 10 and 50 mg/kg/day of trimethoprim-sulfamethoxazole respectively. Clinical improvement was taken to indicate diagnostic accuracy. Non-responders were referred to the neurosurgeons for a stereotactic biopsy. Patients who refused consent for a biopsy were started on antituberculosis treatment with or without dexamethasone. All non-responders were excluded from further statistical analysis. Treatment efficacy was ascertained by clinical and/or radiological improvement. Serological tests included HIV enzyme-linked immunosorbent assay (ELISA) and *Toxoplasma gondii* antibodies, while CD4 cell counts were available in 7 patients. In the latter phase of the study, magnetic resonance imaging (MRI) scans were also done.

Results

Twenty patients completed the study. There was an equal number of male and female patients. The mean age at presentation was 32 years. Hemiparesis was the commonest presenting symptom (77%), followed by mental status changes (62%) and seizures (23%). All patients were HIV-positive. CD4 counts were available for 7 patients. These ranged from 1 cell/µl to 78 cells/µl. *T. gondii* antibodies were positive in 8 of 20 patients. All patients showed complete or partial clinical and radiological improvement (Figs 1a, b, 2a, b). The improvement was sustained on the selected maintenance regimen of 2 tablets 12-hourly. However, not all patients continue to attend for follow-up so the long-term outcome remains speculative. No significant cutaneous side-effects were noted in our study group, although a few developed minor gastrointestinal upset.

Discussion

This study establishes the efficacy of oral co-trimoxazole as therapy for acute cerebral toxoplasmosis in the doses described. This has significant utility in the public sector. It is recommended that oral co-trimoxazole be implemented as first-line therapy in cases of suspected cerebral toxoplasmosis.

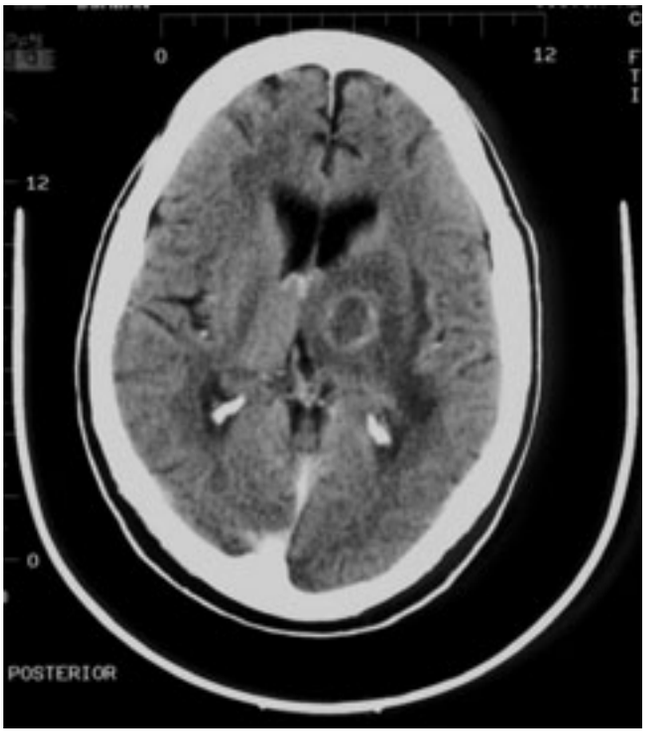

Fig. 1a. Pre-treatment contrast-enhanced CT scan showing a hypodense lesion in the left basal ganglia with rim enhancement and surrounding oedema, causing effacement of the third ventricle and midline shift.

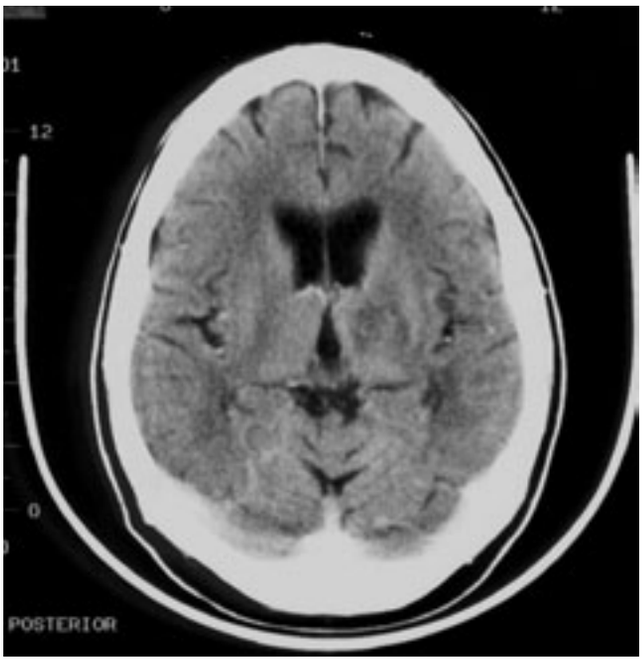

Fig. 1b. Post-treatment contrast-enhanced CT scan of the same patient showing resolution of the oedema, decrease in contrast uptake and residual hypodensity.

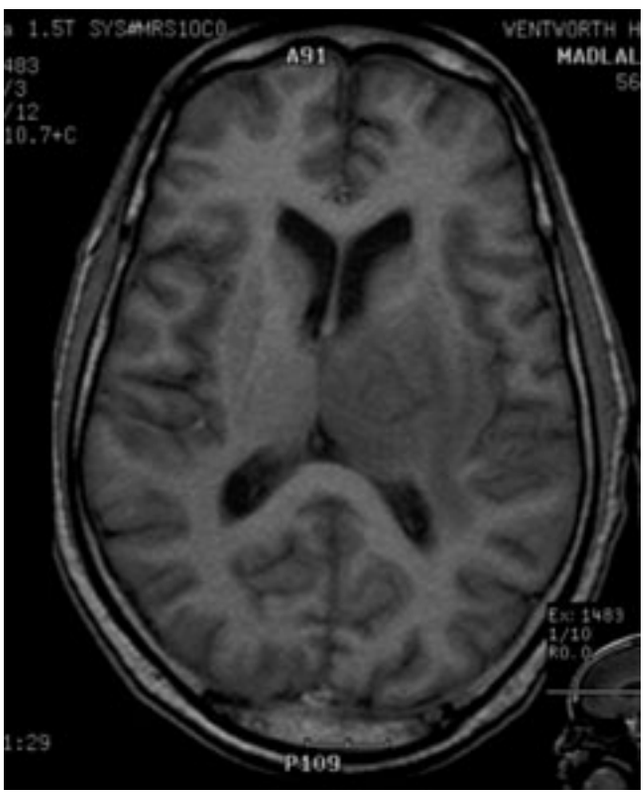

Fig. 2a. Pre-treatment T1 MRI scan showing hypodense lesion in the left basal ganglia with mass effect and midline shift.

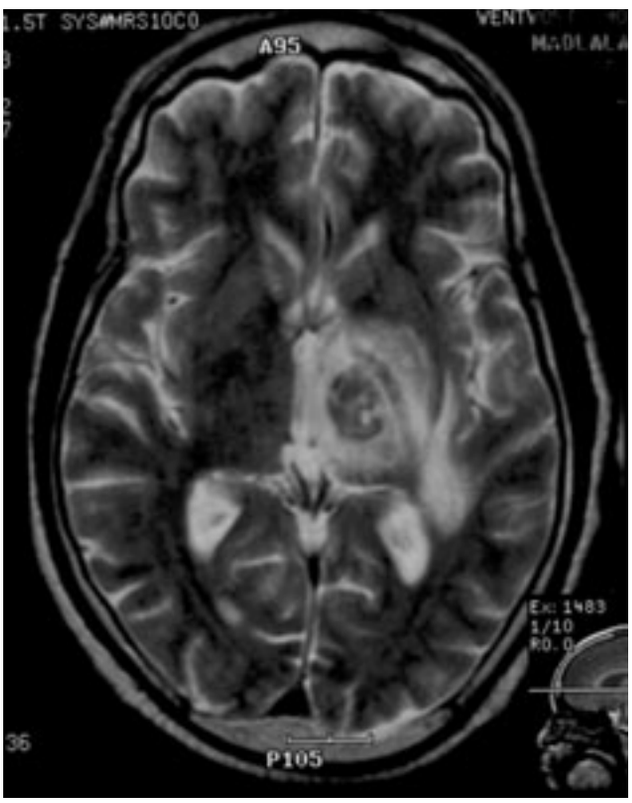

Fig. 2b. T2 MRI picture of the same area showing central hypodensity and surrounding high signal.

A limitation of this study is that many of the non-responders declined a biopsy and were treated empirically. Hence the aetiology of these lesions remains hypothetical. It is therefore unclear whether all non-responders have an alternative diagnosis or whether there is a sub-group of cerebral toxoplasmosis that is unresponsive to co-trimoxazole therapy.

Conclusion

Oral co-trimoxazole is effective for acute toxoplasma encephalitis in doses of 2 tablets 4 times daily for 1 month followed by 2 tablets twice daily as secondary prophylaxis for life. Lifetime prophylactic therapy for toxoplasmosis would only apply if patients are not receiving antiretroviral therapy with the CD4 count being under 200 cells/µl.

References

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