and soft tissue inflammation. Recent evidence shows that endothelial cells subjected to immunological stimuli and ischaemia-reperfusion injury stimuli produce reactive oxygen species and that allopurinol and oxypurinol may be effective in reducing radical production and concomitant cell damage.[2-4] As xanthine oxidase is considered to be one of the sources of these radicals its contribution to the progress of inflammation requires clarification. As the potential contribution of xanthine oxidase lies both in endothelial cell activation and in ischaemia-reperfusion injury we used models of inflammation in which an ischaemia-reperfusion injury component had not previously been invoked (carrageenan induced air pouch inflammation and foot pad inflammation in the rat) and, in addition, a model of chronic persistent synovitis (adjuvant arthritis) in which the joint movement may lead to ischaemia-reperfusion injury as suggested by Blake *et al*.[5]

Allopurinol (18 mg/kg daily for five days before killing) in drinking water had no effect on acute inflammation induced by the subplantar injection of carrageenan in the rat paw. Similarly, allopurinol injected directly into rat air pouches (10–250 mg/kg daily for three days before slaughter) had no effect on the acute (24 hour) or chronic (seven day) phases of carrageenan induced inflammation in this model as measured by total white cell count. Possibly, the use of a low molecular weight inhibitor such as allopurinol, with relatively fast renal clearance, resulted in incomplete inhibition of the enzyme for at least part of the duration of the experiment. We therefore used a more direct method to test the role of xanthine oxidase in inflammation by preventing the *synthesis* of active enzyme.

Tungsten mediated inhibition of molybdenum uptake produces a profound reduction in the activity of the enzyme xanthine oxidase, one of only three molybdenum dependent enzymes found in rats.[6 7] We found that rats fed a diet low in molybdenum and supplemented with tungsten showed no change in the progress of carrageenan induced paw oedema when compared with rats fed a matched diet without tungsten supplementation and with defined molybdenum content. Similarly, there was no change in the progress or extent of *Mycobacterium butyricum* induced adjuvant arthritis (disease assessed by a joint scoring system and total body weight variation).

In conclusion, it seems unlikely that xanthine oxidase system plays a significant part in these models of inflammation.

We have previously proposed that the arthritic component of adjuvant disease may be exacerbated by episodes of ischaemia-reperfusion injury and that this may be a feature of chronic synovitis in humans.[5 8] Although these experiments do not support that hypothesis, they do not exclude other ischaemia-reperfusion mediated sources of injury or the effectiveness of trace amounts of residual xanthine oxidase. The immunological component of adjuvant disease is so powerful a drive in the progress of the arthritis that this is probably not the most sensitive of models for testing the contribution of a non-immunological variable. Ischaemia-reperfusion injury has not been proposed as a contributory factor in the other models of inflammation we used, but the involvement of endothelial cells in acute inflammation is well known and the aim of these experiments was to assess the contribution of xanthine oxidase in the endothelial cell response. Allopurinol is apparently ineffective in these models either because xanthine oxidase inhibition is unimportant or because a greater degree of inhibition is required.

R E ALLEN
A W D CLAXSON
D R BLAKE
C J MORRIS
The Inflammation Group
London Hospital Medical College
Whitechapel
London E1 2AD

Correspondence to: Professor Blake.

1 Puig J G, Mateos F A, Diaz V D. Inhibition of xanthine oxidase by allopurinol: A therapeutic option for ischaemia induced pathological processes? *Ann Rheum Dis* 1989; **48:** 883–8.
2 Zweier J L, Kappusamy P, Lutty G A. Measurement of endothelial cell free radical generation. Evidence for a central mechanism of free radical injury in postischemic tissues. *Proc Natl Acad Sic USA* 1988; **85:** 4046–50.
3 Ratych R E, Chuknyiska R S, Bulkley G B. The primary localisation of free radical generation after anoxia-reoxygenation in isolated endothelial cells. *Surgery* 1987; **102:** 122–31.
4 Gorog P, Pearson J D, Kakkar V V. Generation of reactive oxygen metabolites by phagocytosing endothelial cells. *Atherosclerosis* 1988; **72:** 19–27.
5 Blake D R, Merry P, Unsworth J, *et al*. Hypoxic-reperfusion injury in the inflamed human joint. *Lancet* 1989; **i:** 289–93.
6 Higgins E S, Richert D A, Westerfeld W W. Molybdenum deficiency and tungstate inhibition studies. *J Nutr* 1956; **59:** 539–59.
7 Johnson J L, Rajagopalan K V, Cohen H J. Molecular basis of the biological function of molybdenum. Effect of tungsten on xanthine oxidase and sulphite oxidase in the rat. *J Biol Chem* 1974; **249:** 859–66.
8 Woodruff T, Blake D R, Freeman J, Andrews F J, Salt P, Lunec J. Is chronic synovitis an example of reperfusion injury? *Ann Rheum Dis* 1986; **45:** 608–11.

Genitorectal trichomonas invasion as (co)-factor in pathogenesis of Behçet's syndrome

Sir: I read with interest the article by Teh *et al* describing severe proctitis with rectovaginal fistula in Behçet's syndrome.[1] Metronidazole was used in the treatment together with prednisolone and cephradine. Mouth ulcers disappeared after four days and other ulcerations healed after two months.

In my recent patient, a 29 year old woman with rectovaginal fistula and other manifestations fulfilling criteria for the diagnosis of Behçet's syndrome, rectal ulcerations were 2–3 cm around the fistula opening.

Mouth ulcers disappeared after seven days' treatment with metronidazole alone (800 mg twice daily) and ulcerations in other places after three weeks.

Treatment with metronidazole alone was given as *Trichomonas vaginalis* was found both in vaginal secretion and in smears from the mouth ulcers. Smears from the rectum, from the vicinity of the fistula opening, had microscopically proved infection of mucus with aflagellary forms of trichomonads. Of three cultures, only one was positive and this was for *Trichomonas vaginalis*. The fact that only one positive culture was obtained confirms observations that the existing culture media often give negative results with trichomonads from atypical locations.

Ten weeks after surgical closing of the fistula, regression of all symptoms of Behçet's syndrome occurred, pointing to a probable relation between genitorectal trichomonas invasion and Behçet's syndrome.

The report of Teh *et al*[1] does not state whether detection of trichomonads had been attempted by culture method, and thus I presume that metronidazole was given because of its inhibitory effect on anaerobic bacteria. Its favourable effect on vaginal secretion and the regression of ulcers on mucous membranes might therefore be ascribed to the influence of metronidazole on unrecognised trichomoniasis. Immunology of trichomonads has proved the existence of common sensitisation,[2] and thus I believe that primary genital and secondary rectal trichomoniasis in my patient caused maximal sensitisation and mouth ulcers, and elsewhere was an allergic phenomenon.

In the patient reported by Teh *et al* and in similar cases of rectovaginal fistula the possibility of the existence of trichomoniasis and its secondary manifestations should be considered.

Direct cytopathogenic activity of parasites and their later toxic and allergic effects may play a part in the development of disease on mucous membranes, as well as on other tissues, which is found in Behçet's syndrome.

ŠUKRIJA KRVAVAC
Women's Health Institute
University and Medical Center
Sarajevo, Yugoslavia

1 Teh L S, Green K A, O'Sullivan M M, Morris J S, Williams B D. Behçet's syndrome: severe proctitis with rectovaginal fistula formation. *Ann Rheum Dis* 1989; **48:** 779–80.
2 Honigberg B M. Trichomonads of importance in human medicine. In: Kreier J P, ed. *Parasitic protozoa*. Vol 12. New York: Academic Press, 1978: 275–454.

Sir: There was no evidence of *Trichomonas vaginalis* infection in our patient, and appropriate cultures were all negative. She was treated with metronidazole to cover possible anaerobic infection.

L S TEH
University Hospital of Wales
Heath Park
Cardiff
CF4 4XW

Rheumatological journals

Sir: With the expansion of rheumatology over the past 50 years and the establishment of many new rheumatology centres in the United Kingdom, Europe, and elsewhere there must be a demand for back numbers and volumes of journals covering this exciting period, but I find it difficult to dispose of the following either for a nominal charge or for carriage:

Annals of the Rheumatic Diseases (1945–1982), all bound
Arthritis and Rheumatism (1958–1988)
Rheumatology (1981 to date)
British Journal of Rheumatology (1973 onwards), unbound.

It seems unlikely that I shall need them after this current year and I would welcome any offers from new centres in the United Kingdom or abroad. They take up a lot of shelving but it seems a pity to discard them, together with the *British Medical Journal*, the *Journal of the Royal Society of Medicine*, and the *Annals of Internal Medicine*, if there is any current need for them.

E G L BYWATERS
Long Acre
53 Burkes Road
Beaconsfield
Bucks HP9 1PW