Cladribine in the treatment of systemic lupus erythematosus nephritis

Systemic lupus erythematosus (SLE) nephritis often requires treatment with cyclophosphamide, which carries the risk of major side effects including infection, ovarian failure and bladder malignancy. Therapeutic strategies that would specifically target lymphocytes are appealing. Following the first report of the use of the purine nucleoside analogue cladribine (2-chloro-2-deoxyadenosine), a selective lymphocyte depleting agent, in the treatment of lupus nephritis,1 we report our experience in two patients with severe renal involvement.

CASE 1

A 32 year old woman was diagnosed with SLE at age 28, with polyarthritis, photosensitive rash, subcutaneous nodules, fatigue and lymphopenia. ANA, anti-dsDNA, anti-Sm and anti-RNP antibodies were present. Various immunosuppressants and corticosteroids failed to maintain a sustained remission. Two and a half years after presentation, she developed haematuria and proteinuria and a renal biopsy revealed WHO Class III lupus nephritis. Treatment with pulsed intravenous cyclophosphamide and methylprednisolone was subsequently reintroduced and creatinine has again fallen to 118 µmol/l.

Table 1 shows the results of investigations before and after cladribine infusions for both cases.

In the initial study by Davis et al.,3 three of seven patients treated with continuous cladribine infusion for a week responded completely and renal function did not deteriorate in any of the seven patients. Our limited experience suggests that cladribine may be effective in other manifestations of SLE (that is, cutaneous vasculitis), but it does not seem to have a consistent effect in severe nephritis. Good tolerability of the drug was confirmed and although herpes simplex infections occurred in both patients the role of corticosteroids cannot be ignored.

Further studies are required to establish the position of cladribine in the treatment of SLE especially in the presence of other lymphocyte depleting agents such as mycophenolate mofetil, which is reported to be effective in lupus nephritis,4 even in cases refractory to cyclophosphamide.5

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Leg bone pain syndrome in a kidney transplant patient treated with tacrolimus (FK506)

Patients with chronic renal failure often develop musculoskeletal problems such as renal osteodystrophy and amyloid arthropathy,1 and in successful renal transplantation other complications may ensue, particularly avascular necrosis.2 Since the availability of immunosuppressive agents for rejection, there has been a decrease in musculoskeletal problems, however, new complications have been described such as a symmetrical bone pain syndrome and reflex sympathetic dystrophy syndrome (RSDS), some of them related to cyclosporin.3

Tacrolimus is a novel macrolide with potent immunosuppressive effects and with a very similar mechanism of action to cyclosporin A—that is, calcineurin phosphatase inhibition.4 We report on a patient treated with tacrolimus, who developed a leg bone pain syndrome, two months after kidney transplantation.

The patient was a 50 year old woman with severe hypertension, treated with atenolol (100 mg/day), verapamil (240 mg/day) and clonidine (0.150 mg/day). She developed chronic renal failure and was treated with peritoneal dialysis in 1995. In 1997 she underwent a kidney transplant from a cadaver and immunosuppressive treatment with tacrolimus (4 mg/day) and prednisonone (15 mg/day) was started. Two months after transplantation she reported progressive bilateral symmetric pain in the knees. Because of pain and difficulty in walking she was readmitted to our unit. At this time, the patient was receiving tacrolimus (4 mg/day) and prednisonone (5 mg/day). Clinical examination revealed pain on movement and tenderness over the bone and joint line, without swelling

Table 1 Results of investigations before and after cladribine infusions

<table>
<thead>
<tr>
<th>Patient 1</th>
<th>First infusion</th>
<th>Before</th>
<th>After</th>
<th>Second infusion</th>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proteinuria</td>
<td>12.53 g/24 h</td>
<td>4.2 g/24 h</td>
<td>5.2 g/24 h</td>
<td>12.4 g/24 h</td>
<td>4 g/24 h</td>
<td>7.2 g/24 h</td>
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<tr>
<td>Serum creatinine</td>
<td>140 µmol/l</td>
<td>154 µmol/l</td>
<td>163 µmol/l</td>
<td>171 µmol/l</td>
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<tr>
<td>Anti-ds DNA</td>
<td>132 IU/ml</td>
<td>292 IU/ml</td>
<td>&gt;300 IU/ml</td>
<td>149 IU/ml</td>
<td>149 IU/ml</td>
<td>149 IU/ml</td>
</tr>
<tr>
<td>C3</td>
<td>0.51 g/l</td>
<td>0.72 g/l</td>
<td>0.51 g/l</td>
<td>0.39 g/l</td>
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<tr>
<td>C4</td>
<td>0.13 g/l</td>
<td>0.15 g/l</td>
<td>0.12 g/l</td>
<td>0.12 g/l</td>
<td>0.16 g/l</td>
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</tr>
<tr>
<td>C3d</td>
<td>22 units/ml</td>
<td>23 units/ml</td>
<td>20 units/ml</td>
<td>13 units/ml</td>
<td>12 units/ml</td>
<td></td>
</tr>
<tr>
<td>Urine analysis</td>
<td>red cells, hyalurgranular, cellular casts</td>
<td>red cells, hyalurgranular, cellular casts</td>
<td>red cells, hyalurgranular, cellular casts</td>
<td>red cells, hyalurgranular, cellular casts</td>
<td>red cells, hyalurgranular, cellular casts</td>
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</tbody>
</table>

Reference ranges: serum creatinine 50–100 µmol/l, anti-dsDNA: 50–300 IU/ml positive, >300 IU/ml strongly positive, C3: 0.63–1.19 g/l, C4: 0.11–0.43 g/l, C3d: up to 12 units/ml

Spleen haemorrhagic infarction and hazards of anticoagulation in Wegener’s granulomatosis

In the largest cohort published to date, no splenic involvement is described in Wegener’s granulomatosis (WG). 1 We report on two patients who required splenectomy for symptomatic spleen infarction in the course of WG.

CASE 1

A 42 year old man was admitted with an eight month history of arthritis and low grade dysaesthesia. Examination showed an acutely ill patient with a 39°C fever, oral ulcers, haemorrhagic gingival hyperplasia, bilateral haemorrhagic nasal discharge with crusts, diffuse necrotic purpura, neurtiis, and black discoloration of some fingers and toes. The spleen was not palpable. Silent anterior myo-cardial infarction was diagnosed because of raised MB-CK levels and ST-segment increase with loss of R waves in leads V1,V2,V3 on electrocardiogram. Anit neutrophil cytoplasmic antibodies (c-ANCA) were disclosed in serum and necrotising vasculitis was shown on skin biopsy specimen. 2 No antiphospho- lipid antibody or coagulation protein abnormality could be disclosed. Treatment consisted of intravenous administration of prednisolone, cyclophosphamide, sodium heparinate, diltiazem, dinitrosorbide and enalapril. His short-term course was eventful. At day 14, the patient suddenly developed a severe haemorrhagic shock. Echotomography of the abdomen showed a splenic mass. At laparotomy, the spleen was almost disrupted by voluminous haematoma. Histological analysis of the spleen showed widespread necrotising vasculitis with haemorrhagic infarction. After five years of follow up, the patient is in complete remission with oral corticosteroid treatment.

CASE 2

A 23 year old young man was admitted in August 1996 because of repeated otitis media, sinusitis, epistaxis, headache, arthralgia with fever and weight loss. Despite a short course of oral corticosteroids and antibiotics, his general condition worsened. Antiproteinase 3 c-ANCA were disclosed in serum. Chest computed tomography showed pulmonary nodules. Intranasal endoscopic biopsies demonstrated necrotising vasculitis with epithelial and giant cells. Treatment included oral prednisone and intravenous cyclophosphamide pulses. After a few days, serum creatinine concentrations abruptly increased to 198 mmol/l and urine analysis showed microscopic haematuria and proteinuria. High dose methylprednisolone pulses were then given, intravenous cyclophosphamide was changed to a 10 ng oral dose and the patient eventually achieved remission. In October 1996, abdomen computed tomography showed an intrasplenic lesion that was consistent either with a splenic infarct or haematoma (fig 1). The latter course was marked by a WG flare in January 1997, which was complicated with massive thrombosis of the left iliofemoral vein and the inferior vena cava. No thromboprophylactic disorder could be found. Intravenous heparinate, diltiazem, dinitrosorbide and angiotensin converting enzyme inhibitor (first dose), enalapril. His short-term course was uneventful. A 23 year old young man was admitted in August 1996 because of repeated otitis media, sinusitis, epistaxis, headache, arthralgia with fever and weight loss. Despite a short course of oral corticosteroids and antibiotics, his general condition worsened. Antiproteinase 3 c-ANCA were disclosed in serum. Chest computed tomography showed pulmonary nodules. Intranasal endoscopic biopsies demonstrated necrotising vasculitis with epithelial and giant cells. Treatment included oral prednisone and intravenous cyclophosphamide pulses. After a few days, serum creatinine concentrations abruptly increased to 198 mmol/l and urine analysis showed microscopic haematuria and proteinuria. High dose methylprednisolone pulses were then given, intravenous cyclophosphamide was changed to a 10 ng oral dose and the patient eventually achieved remission. In October 1996, abdomen computed tomography showed an intrasplenic lesion that was consistent either with a splenic infarct or haematoma (fig 1). The latter course was marked by a WG flare in January 1997, which was complicated with massive thrombosis of the left iliofemoral vein and the inferior vena cava. No thromboprophylactic disorder could be found. Intravenous heparinate, diltiazem, dinitrosorbide and angiotensin converting enzyme inhibitor (first dose), enalapril. His short-term course was uneventful.
showed massive or multiple areas of splenic necrosis, associated to a variable extent with central arteritis, splenic trabeculitis, follicular arteriolitis, disseminated parenchymatous granuloma and capsulitis (fig 2). Patients with splenic infarction in WG usually remain asymptomatic. Prominent splenomegaly is rare. With computed tomography, focal splenic infarction appears as well defined, peripheral wedge shaped areas of low attenuation. In WG, the diffuse vasculitis process often results in massive hypodense lesions involving the spleen parenchyma (fig 1). A peripheral rim of enhancement may be seen, as for spleen abscess, haematoma and lymphoma. Splenectomy has been performed successfully in some patients. Spleen lesions may also appear to heal on repeated computed tomography under medical treatment only, consisting of prednisone and cyclophosphamide.

Few recent reports of splenic involvement in WG provide histological analysis from live patients. In one case, a spontaneous splenic haemorrhage was ascribed to vasculitis in a patient who had severe WG that required haemodialysis. In our two patients, microscopical study of the spleen also showed haemorrhagic infarction caused by specific WG related vasculitis process. A severe splenic haemorrhage occurred in patient 1, which was clearly related to both necrotising vasculitis and hypocoeagulable state. Anticoagulation was indicated for inaugural myocardial infarction in case 1 and deep venous thrombosis in case 2, in both cases during active WG flare. Splenectomy was required in both our cases.

Our data suggest that antithrombotic treatment entails a specific risk of bleeding complications in patients with WG vasculitis. When anticoagulation is necessary in WG patients, computed tomography of the abdomen should be systematically performed and, if splenic infarction is disclosed, splenectomy should be considered.

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**Jean-Charles Piette**
**Marc Andre**
**Olivier Aubert**
**Frédéric Charlotte**

**Reference**

patients with DIL are usually older; the prevalence of men and women is similar, and the presenting symptoms are usually mild, with the patient usually complaining of malaise, fever and arthralgia, with or without arthritis, while skin, central nervous system or renal involvement is rare. Pleuropericardial disease is frequent and, as in classic SLE, anaemia and leucopenia may be present. Serum complement components are usually normal, ANAs are positive but anti-dsDNA and anti-Sm are negative, while anti-histones antibodies can be detected in most of patients.

The pathogenic mechanisms proposed for DIL include: cross reactivity between drug and the nucleic acid; hapten complex formation between drug and nucleic acid, or structural damage to the chromosomal DNA; action of drug as an adjuvant or immunostimulant, which, in concert with appropriate immune response genes, triggers polyclonal B/T cell activation; and interference with the complement pathway.

The incidence of side effects associated with amiodarone ranges from 40% to 93% and, in most of cases, these side effects are consequence of its potential to be directly toxic to several organ systems. However, there is also some evidence of immunologically mediated phenomena related to amiodarone. A positive skin and basophil degranulation tests with amiodarone, secretion of leukocyte inhibitory factor, positive lymphoblast transformation and circulation of a specific antibody of the IgG class have been described. Moreover, several studies suggest that various biological and immunological markers of "systemic" disease activity are present in patients taking this drug. Circulating immune complexes, ANAs, and nonspecific increase in ESR and white blood cell count, sometimes with eosinophilia, are common findings.

Low ANA titre is not uncommon in an elderly patient. However, spontaneous SLE in elderly people is not usual and DIL must always be considered in the differential diagnosis. This case, presenting with malaise, fever, arthralgia, circulating immune complexes, and autoantibodies strongly suggests an immunological underlying condition. Moreover, this patient meets four SLE criteria: malar rash, serositis, haematological markers of "systemic" disease activity are present in patients taking this drug. Circulating immune complexes, ANAs, and nonspecific increase in ESR and white blood cell count, sometimes with eosinophilia, are common findings.

The prevalence of antinuclear antibodies (ANA) in relapsing polychondritis (RP) has been recently reported by Zeuner et al as high as 66%, usually in a low titre with a speckled pattern. We report here on our experience of ANA testing in patients with RP.

The charts of 180 patients followed up in our institution fulfilling the criteria for RP proposed by Michet et al have been recently retrospectively reviewed. The aim was to focus on dermatological manifestations and their relation with myelodysplasia. This aim led us to exclude 36 patients because the association of RP with potentially confounding diseases, such as systemic lupus erythematosus (SLE) present in nine, mixed connective tissue disease (MCTD) in five, rheumatoid arthritis in three, Takayasu arteritis in three, mesenteric panniculitis in three, spondyloarthritis in two, Crohn's disease in two, psoriasis in two, or Lichen planus in two. Among the 144 patients remaining, 111 have been tested for ANA by using either Hep-2 cells or liver sections as substrate, or both. Most patients had repeated ANA determinations, including initial testing before onset of corticosteroid treatment, and the higher titres were considered for analysis. Figure 1 shows the histogram of ANA positivity according to RP titre.

Figure 1 Prevalence of ANA in "pure" RP according to ANA titre.

ANA were either absent or present in low titres in a majority of patients (73% and 18%, respectively). "Significant" titres—that is, titre > 1/100 ANA—were demonstrated in only 10 of 111 patients (9%). The pattern of fluorescence was as follows: homogeneous in five, homogeneous and speckled in two, speckled and nuclear in one, perinuclear and nuclear in one, and not provided in one. Among those 10 patients, five had clinical or ophthalmological features, or both, suggestive of an associated Sjögren's syndrome—disease including two who had antibodies to both SS-A and SS-B, and two others had a myelodysplastic syndrome.

None of these 10 patients had antibodies to ds-DNA. Using the same methods, ANA > 1/100 were found in 15 of the 36 patients initially excluded (42%). Among the nine with SLE, ANA > 1/100 and antibodies to ds-DNA (by Farr assay or Creatidia fluorescence) were found in eight patients. All five patients with MCTD had ANA > 1/1000 (in a speckled pattern in four), with positive antibodies to RNP and negative tests for ds-DNA. The two remainders had either rheumatoid arthritis, or Lichen planus associated with multinodular goitre; both of them also had features suggestive of sicca syndrome. Therefore, within these 36 patients, strong ANA positivity was mainly associated with MCTD or Sjögren's syndrome, or all three.

Beside the recent article by Zeuner et al, the prevalence of ANA has rarely been reported in RP. McAdam et al found positive ANA in four of their 18 patients tested (22%), and noted 3 of 23 (13%) ANA positivity in a literature review. Data regarding ANA were not provided in the large series of patients with RP followed up at the Mayo Clinic. The low prevalence of ANA observed in our cases with “pure” RP—that is, RP not associated with another connective tissue disorder except for a possible Sjögren's syndrome—agrees with the negative results of tests for IgG antinucleosomes antibodies recently reported by our group in this condition.

We conclude that: (a) the prevalence of ANA observed in RP is low and, (b) as suggested by other authors the finding of a significant titre of ANA in a patient with RP strongly suggests the presence of an associated disorder, such as SLE, MCTD, Sjögren's syndrome or acquired myelodysplasia.

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There is no association between polymyalgia rheumatica and acute parvovirus B19 infection

Parvovirus B19 has been associated with a growing number of diseases. Besides the frequent manifestations such as erythema infectiosum and miscarriages in persons with underlying haemolytic anaemia, hydrops feta
dis in pregnant women and acute or chronic arthritis a range of rather rare diseases have been described in recent reports. Among them are case reports on persistent parvovirus B19 infection in immune incompetent people, encephalitis, myocardi
tis, systemic lupus erythematosus (reviewed by Anderson and Younsi). Furthermore, parvovirus B19 has been suspected to play a part in the aetiology of polymyalgia rheumatica (PMR). Because of the acute onset of PMR and its systemic symptoms an infection with parvovirus B19 may be a relevant factor. Additionally, autoimmune processes have been demonstrated in both, PMR and par
virus B19 infection. As the receptor for parvovirus B19, the F-blood group antigen (globoside), is also present on endothelial cells an interrelation between parvovirus B19 and giant cell arteritis or PMR may be possible. Parvovirus B19 can only replicate in eryth
droid precursor cells in human bone marrow, but it is known that infection of cells non-permissive for viral replication leads to an excess production of the viral non-
structural protein (NS1) without production of capsid proteins. Further
tmore, parvovirus B19 has been suspected to be a part of the aetiology of polymyalgia rheumatica (PMR).

With giant cell arteritis excluded; mean (SEM) age 67.0 (0.8) years, range: 48–77 and, for comparison, in 135 healthy controls of different ages. At the time point of blood sampling (median disease duration at the time point of blood sampling: 0.6 years, range: 0–7.3, mean (SEM): 1.4 (0.2) years), 35 patients had no corticosteroids and 75 patients received on an average 15.2 (1.8) mg prednisolone/day. Furthermore, we investi
gated the association between age, symptoms or laboratory parameters and the presence of NS1 specific antibodies in healthy controls and patients with PMR. Non-parametric Kruskal-Wallis one way analysis was used to compare means of different subgroups. The significance level was p<0.05. Subject groups had various ages between 18 to 75 years. Overall sero
prevvalence of IgG against VP1 and VP2 was 78% (fig 1). Overall IgG seroprevalence against VP1 and VP2 was 88% in patients with PMR (not significantly different versus the age matched control group). With respect to the NS1 IgG antibody, overall seroprevalence in the control group was 22% (fig 1) and in patients with PMR 20% (p=0.057 versus the age matched control group). Furthermore, we investigated the association between the presence of NS1 IgG antibodies and PMR related symptoms or laboratory parameters (patients with NS1 compared with patients without NS1 IgG antibodies were not different in age, sex, and medication). The symptoms were assessed using standard record forms from the medi
cal history (at the time serum was collected). We asked the patients for muscu
lar pain in the left/right shoulder, left/ right upper arms, left/right neck, left/right gluteal muscle, and left/right thigh. If one muscle group was painful, the corresponding item was scored with one point (the sum of the item points was the overall muscle score). In PMR patients with NS1 IgG as compared with patients without NS1 IgG, arthralgia was more frequent (versus without: 73% vs 40%, p=0.024). However, the overall muscle score was lower in NS1 positive than in NS1 negative patients (0.5 (0.2) SEM v 1.6 (0.3) SEM score points; p=0.021). With respect to other PMR related symptoms, no significant differences were found. In patients with a positive NS1 IgG antibody, interleukin 6 (4.6 (0.9) SEM v 11.3 (2.2) SEM; p=0.037) and soluble ELAM (48.2 (4.8) SEM v 71.4 (5.2) SEM; p=0.024) were significantly lower as compared with patients without NS1 IgG. No significant differences were found with respect to erythrocyte sedimentation rate, C reactive protein, tu
mor necrosis factor, interleukin 2, and interleukin 1β.

In view of these data, there was a positive association between NS1 and arthralgia. However, other symptoms and parameters of inflammation such as erythrocyte sedimenta
tion rate were not associated with the presence of NS1 IgG. Furthermore, disease related immune mediators such as interleukin 6 or soluble ELAM were lower in patients with as compared with patients without NS1 IgG. As a positive NS1 IgG indicates an active infection, an acute parvovirus B19 infection does not seem to be a pathogenetic factor in our patients with PMR.

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2 Kerr JR, Boyd N. Autoantibodies following par
3 Cimmino MA. Genetic and environmental fac
4 Piette JC, El-Rassi R, Wechsler B, Laporte JL, Lüdke D-93042 Regensburg, Germany
5 Kerr JR, Boyd N. Autoantibodies following par
6 Soloninka CA, Anderson MJ, Laskin CA. Anti-
7 Liu JM, Green SW, Shimada T, Young NS. A
8 Trentham DE, Le CH. Relapsing polychondri
10 Trentham DE, Le CH. Relapsing polychondri
11.3 (2.2) SEM; p=0.024) were
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Neutrophil chemotaxis in Behçet's syndrome

It has been suggested that the marked cellular inflammatory response, which characterises Behçet's syndrome (BS), may be attributable to increased neutrophil locomotion. However, others disagree. We have re-evaluated chemotaxis of polymorphonuclear leucocytes (PMNs) in BS among a greater number of patients in a controlled setting.

Fifty four male BS patients, nine male patients with ankylosing spondylitis, eight with psoriasis and 37 male healthy controls were studied with 28 female patients with BS and 16 healthy female controls. Behçet patients with severe disease were those with active major vessel and/or eye involvement.

We measured chemotaxis with the "under the agarose method". The measurements were masked with the assessors not knowing the diagnoses. An inverted microscope fitted with an ocular micrometre disc to measure the migration of neutrophils from middle wells to outer (chemotaxis) and inner wells (chemokinosis) was used. Zymosan activated sera (patients or controls) were used as a source of higher chemotactic indices were expressed as micrometre square (1 mm² = 8 squares). Additionally the plates were evaluated macroscopically for observation of the migration between neutrophil wells.

Tables 1 and 2 show the results. There were no significant differences between the chemotactic indices of the various groups of patients and controls studied of either sex. Maximal chemotactic rates in the groups varied from 67% to 100%.

The Boyden millipore filter system has extensively been used for chemotaxis experiments. The agarose method is simple and cheap. This method can preferentially be used to differentiate chemokinesis from chemotactic migration.

There is marked heterogeneity in disease expression in men and women in BS and we reconcile that some of the confusion in the literature about neutrophil activity might be related to this. Thus we analysed our data separately for either sex. Although there was a tendency for male patients with severe disease to have higher chemotactic indices this was not statistically significant (p=0.62). We did not study any diseased controls for female patients with BS.

Abdulla and Lehner observed decreased chemotaxis in BS. Fordham et al., on the other hand reported increased chemotaxis, but normol random migration. While Wilkinson, similar to our experience, observed normal chemotaxis in BS, more recently Carletto et al. reported augmented chemotaxis especially in the active phases of the disease. Finally, Ben Ezra et al., among a group of Behçet patients with uveitis could demonstrate increased chemotactic activity only among a few of these patients, compared with that observed among patients with other forms of uveitis. They concluded that increased chemotactic activity was not a regular feature of ocular BS (personal communication).

In vivo assays do not differentiate chemotaxis from chemokinesis. In the Carletto study clinically active Behçet patients demonstrated increased chemotaxis to sera by Sen's modified in vivo assay. Others had found hyperchemotaxis to neutrophil cytoplasmic fractions again by using an in vivo assay. Although it is difficult to compare the results of in vitro and in vivo assays, we thought these reported increases might have resulted from increased chemokinesis. In our experiments we observed maximal chemotaxis (3 mm) frequently, however, we did not find any significant differences in chemotactic indices between diseased and healthy subjects.

An interesting aspect of our study was the migration between neutrophil wells that was observed in many of the Petri dishes. This was observed even though we had not used cellular materials as chemotactic agents. Presumably the gravity of the cellular materials overcame the chemical gradient of zymosan activated sera in some Petri dishes. Because of the observed migration between neutrophil wells, we suggest that there should be only one "triple well rank" in a Petri dish. On the other hand our method of preincubation of the whole blood for 45 minutes at 37°C before harvesting the PMNs (intended for better viability) might have been responsible for this phenomenon by increasing the chemotactic activity in all groups studied. Further studies are needed to clarify these issues.

TALBE 1 Chemotactic indices in men*

<table>
<thead>
<tr>
<th>Groups</th>
<th>Number</th>
<th>Mean (SD)</th>
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<tbody>
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<td>Behçet's</td>
<td>28</td>
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<tr>
<td>Healthy controls</td>
<td>16</td>
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</tr>
</tbody>
</table>

*Kruskal-Wallis one way analysis of variance, corrected for ties: x²(2,183)=1, DF=4, p>0.05.

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MATTERS ARISING

Neuropsychiatric systemic lupus erythematosus

The considerable difficulties in making sense of the literature on patients with lupus involving the central nervous system are re-emphasised in the paper by Rood et al. The authors, who to be fair take a sensibly cautious approach to their results, nevertheless seek to persuade us that the IL10 locus is associated with neuropsychiatric lupus on the basis of a historical case notes review of 42 such patients with neuropsychiatric disease, compared with 50 who lack such involvement. Their conclusion needs to be treated with caution. Does it make sense to lump together 42 highly diverse patients and make the kind of claim they have made? The authors suggest that CNS lupus is attributable to either antiphospholipid antibody related thrombotic events, or “immune mediated” disease. This division is artificial. There is a considerable literately on CNS lupus that proposes that a wide variety of immunopathogenic mechanisms may be responsible in individual cases. These mechanisms include thrombotic effects, which may be linked to antiphospholipid antibodies, a true vasculitis, a cross reaction between antibodies that recognise the lymphocyte surface targets and neurologic antigens, and autoantibodies to a wide variety of neurological targets. A considerably larger number of patients will have to be studied before any claims of links to an IL10 promoter haplotype can be truly convincing.

We agree with the authors that patients with SLE have a higher innate production of IL10 than controls. However, as there is no significant difference in the frequency of the IL10 promoter single nucleotide polymorphism (SNP), in SLE patients when


compared with controls in their study, we suspect that the difference in IL10 production is not attributable to functional differences between patients with SLE and controls in terms of the IL10 SNP alleles frequencies. Differences have been described with respect to microsatellites and one awaits confirmation from other populations or family studies. To our knowledge, a difference in IL10 production between patients with neuropsychiatric disease SLE and non-neuropsychiatric disease SLE has not been described. The described associations would be biologically meaningless if IL10 production is similar between these two groups.

The authors suggest that the -1082A allele is associated with a higher innate IL10 production, however, they appear to ignore the only published study to date that showed that the A allele was associated with lower IL10 production. In addition we have confirmed that the A allele is associated with lower IL10 production in transient transfection studies and the ATA/ATA genotype is associated with IL10 production in whole blood culture. The increase in the A allele is mainly accounted for by an increase in the ATA haplotype in their neuropsychiatric disease patients and therefore they are describing an association with a low IL10 producing haplotype, not a high IL10 producing haplotype. One interpretation of this would be that patients with neuropsychiatric disease symptoms are unable to adequately control inflammation from a variety of different pathological mechanisms because of low IL10 production.


Authors’ reply

We thank Drs Isenberg, Crawley and Woo for their interest in our paper. They argued that the dichotomy of the pathogenesis of CNS lupus in “immune mediated” and thromboembolic disease is too rigid, and proposed that different pathogenetic mechanisms can be deemed responsible for CNS lupus. As the hallmark of SLE is the production of autoantibodies, it seems to be justified to assume that the pathogenesis of CNS lupus is B cell mediated. Based upon this assumption we clustered the individual neuropsychiatric disease SLE patients and tested the hypothesis that a genetic marker in the promoter of the IL10 gene is associated with the phenotype of CNS-SLE.

In general, a positive result in a genetic association study is only possible after a correct definition of the phenotype. After all, if the phenotype is not defined, the magnitude and statistical significance of the association will be less or lost because of the random distribution of the genetic marker in the unclassified patients. If misclassification occurred in the sense that SNE lupus patients were attributed to the non-neuropsychiatric disease SLE population, the fact that we still found a positive result strengthens our conclusions instead of weakens it.

It might be argued that thromboembolic events do not fit in the pathogenetic model of B cell mediated CNS lupus. But, as stated clearly in the article, even after exclusion of these ambiguous events the distribution of the frequencies in the neuropsychiatric disease SLE and non-neuropsychiatric disease SLE patients remains the same.

Of course we agree with the notion that our findings might be repeated in another group of patients. Interestingly, the increased prevalence of ATA in neuropsychiatric disease SLE patients has already been reported by Mok in a group of Chinese SLE patients. Currently we are investigating the distribution of the IL10 promoter haplotypes of neuropsychiatric disease SLE patients in an ethnically different population.

In our article we have elaborated on two possible explanations of our findings. Firstly, the increased frequency of the ATA haplotype might be associated with an increased production of IL10. We made this assumption in the light of previous studies stating that SLE as a whole is characterised by an increased innate IL10 production. It is wrong to extrapolate these conclusions to our population. Because of the retrospective character of our study, we were not able to measure IL10 production in each group and therefore we cannot say whether or not IL10 production in our SLE patients as a whole was similar to or different from the control population. It might well be that differences in IL10 production would only emerge after stratiﬁcation into neuropsychiatric disease SLE and non-neuropsychiatric disease SLE patients. Furthermore, it might be that in the populations mentioned in the text, there was an excess of patients with neuropsychiatric disease SLE.

The second explanation for the skewing found in IL10 promoter polymorphisms might be that the ATA haplotype is associated with neuropsychiatric disease SLE in the ATA patients is not conferred via an increased IL10 production at all, but that it is merely a marker for the real neuropsychiatric disease SLE susceptibility allele. It is not clear whether or not IL10 promoter SNPs are associated with low or high IL10 production, because of the ambiguous reports in the literature. In our laboratory, the -1082A allele has been found to be associated with high IL10 production. In this light we have speculated about the possible role of high IL10 production and the pathogenesis of neuropsychiatric disease SLE. Isenberg et al have referred to another group stating that -1082A is associated with a low vivo IL10 production and they interpret our results with this finding in mind.

In conclusion, we do not know the relevance of the IL10 promoter in the in vivo regulation of IL10 production and therefore both explanations are equally speculative.

A man with intermittent fever and arthralgia

Knight and Symmons report a very interesting case of a man with Whipple’s disease and provide us with a timely update on this rare condition. They describe how six months after initial presentation the diagnosis of adult onset Still’s disease (AOSD) was made and despite regular review at several centres, this diagnosis was upheld for a further five years.

Multiple investigations were performed adding little to the original diagnosis. It is not mentioned whether a serum ferritin was taken. This may have been useful given the initial diagnosis of AOSD as it might have resulted in questioning this diagnosis, permitting an earlier diagnosis of Whipple’s disease.

It is widely reported in the literature, as far back as 1975, that increased serum ferritin may be of use in both diagnosis and monitoring of AOSD. 1 Hyperferritinaemia is not however exclusive to AOSD, as various malignancies, hepatic necrosis and haemachromatosis can all cause it. However, values up to 25 000 µg/l have been observed in AOSD and reportedly, values rarely exceed 3–5000 µg/l in the above conditions. The pathogenesis is not clearly understood, but it has been hypothesised that in AOSD, cytokine upregulation of ferritin mRNA...
translational may occur. This compares with the iron regulated pathway of ferritin synthesis in haemachromatosis and iron overload syndromes.

A comparative study of diagnostic criteria in AOSD by Mason et al. suggest the Yamaguchi criteria are superior to the others tested, including Cush et al quoted by Knight and Symmons. However, none of the criteria to aid diagnosis make use of serum ferritin measurement despite the claims for its importance in the literature and acceptance in clinical practice. Although undoubtedly helpful if very high, it is not clear what the relevance of a normal value in AOSD is, in a case satisfying clinical diagnostic criteria (although we have never seen such a case). In rare diseases such as AOSD, it is difficult to assess and evaluate diagnostic criteria and calculate sensitivity and specificity of possible disease markers. If serum were stored on this patient it would be interesting to know the serum ferritin measurement and how, if at all, it would have affected this patient’s management.

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Authors’ reply

We thank Drs Quinn and Gough for their interest in our paper. Our patient did have his serum ferritin measured in 1992. It was 197 µg/l (normal range 15–200). This was therefore a situation in which the patient satisfied clinical diagnostic criteria for adult onset Still’s disease (AOSD) but had a normal ferritin concentration. As the authors point out, had the ferritin concentration been high, this could have helped to confirm the diagnosis that gave that it was in the normal range, it could not actually be used to refute the diagnosis. It was always felt that this patient’s disease was not typical of AOSD and the various physicians who looked after the patient were always always willing to consider alternatives. However, it is difficult, even with the benefit of hindsight, to conclude that Whipple’s disease could have been diagnosed earlier. Although the normal serum ferritin was not in keeping with the diagnosis of AOSD it did not point towards any other diagnosis in particular.

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Ear, ear, what’s going on in Norfolk?

Having recently started work in the rheumatology department of the Norfolk and Norwich Hospital I read with great interest the article on Hug(h)ears on antiphospholipid syndrome. Ann Rheum Dis 1999;58:65–6.


Authors’ reply

We note with interest the report from Dr Gaffney. While the coincidence is indeed curious, these cases do suggest possible mechanisms for activation of thrombosis. The external ear is characterised particularly by a lower average temperature than core body temperature, and by its susceptibility to trauma and pressure effects. In our case, cryoglobulins were not identified, and no comment in this regard is made by the authors. There is no specific reference to any aural trauma, though presumably, as in our case, it is difficult to assess what pressure was exerted on the external ear during sleep. It is plausible that such pressure causes a degree of blood stasis, which together with inadequate anticoagulation, resulted in thrombosis. Such speculation may be interesting, but it is this latter point that deserves emphasis—patients with antiphospholipid syndrome who have had thrombi will do so again, potentially with serious consequences, if the INR is not scrupulously maintained above 3.0, a message that must be spread widely:

“Friends, Norfolk countrymen, lend me your ears!”

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Neutrophil chemotaxis in Behçet's syndrome

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