LETTERS

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 renal biopsy revealed WHO Class III lupus nephritis. Treatment with pulsed intravenous cyclophosphamide and methylprednisolone was 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.

Table 1. Results of investigations before and after cladribine infusions

<table>
<thead>
<tr>
<th>Case</th>
<th>Before</th>
<th>After</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>12.25 µg/d</td>
<td>4.2 µg/d</td>
</tr>
<tr>
<td>2</td>
<td>100 µmol/l</td>
<td>120 µmol/l</td>
</tr>
<tr>
<td>C3</td>
<td>0.51 g/l</td>
<td>0.67 g/l</td>
</tr>
<tr>
<td>C4</td>
<td>0.13 g/l</td>
<td>0.14 g/l</td>
</tr>
<tr>
<td>C3d</td>
<td>22 units/ml</td>
<td>10 units/ml</td>
</tr>
</tbody>
</table>

Proteinuria returned to 98 µmol/l and proteinuria to 5.3 g/24 h and remained stable despite gradual reduction of prednisolone dose to 15 mg daily.

CASE 2

A 35 year old woman was diagnosed with SLE at age 31, with fever, pancytopenia, and nephrotic syndrome (proteinuria: 6.65 g/24 h). ANA and anti-dsDNA antibodies were present. Renal biopsy revealed WHO Class III lupus nephritis. In the next four years she required three treatment cycles of intravenous cyclophosphamide (total dose per six month cycle: 9–10 g). Azathioprine, methotrexate, cyclosporin A and prednisolone 5–40 mg/day in the interim had failed to control her disease. Cyclophosphamide, additionally, had resulted in premature ovarian failure. Repeat renal biopsy showed progression to Class IV nephritis with focal necrosis and crescents. Cladribine (continuous IV infusion of 0.05 mg/kg/day for seven days) and prednisolone 40 mg/day proved ineffective as creatinine rose from 149 to 243 µmol/l in two months. She also developed a perineal herpes simplex infection but drug was otherwise well tolerated. Pulse intravenous cyclophosphamide and methylprednisolone were subsequently reintroduced and creatinine has again fallen to 118 µmol/l.

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.2

Tacrolimus is a novel macrolide with potent immunosuppressive effects and with a very similar mechanism of action to cyclosporine A—that is, calcineurin phosphatase inhibition.3 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 prednisone (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 prednisone (5 mg/day). Clinical examination revealed pain on movement and tenderness over the bone and joint line, without swelling
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). We report on two patients who required splenectomy for symp- tomatic spleen infarction in the course of WG.

**CASE 1**

A 42 year old man was admitted with an eight month history of arthritis and lower limb dyspnea. 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, neuritis, and black discoloration of some fingers and toes. The spleen was not palpable. Silent anterior myocar- dial infarction was diagnosed because of raised MB-CK levels and ST-segment in- crease with loss of R waves in leads V1, V2, V3 on electrocardiogram. Antineutrophil cyto- plasmic antibodies (c-ANCA) were disclosed in serum and necrotising vasculitis was shown on skin biopsy specimen. No antiphospholip- id antibody or coagulopathy or protein abnormal- ity could be disclosed. Treatment consisted of intravenous administration of prednisolone, cyclophosphamide, sodium heparinate, diltiazem, dinitrosorbide and enalapril. His short-term course was unevent- ful. 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 impossibly increased in volume. Histological analysis of the spleen showed widespread necrotising vasculitis with haem- orrhagic infarction. After five years of follow up, the patient is in complete remission with oral corticoidozole treatment.

**CASE 2**

A 23 year old young man was admitted in August 1996 because of repeated otitis media, sinusitis, epistaxis, headache, arthral- gia with fever and weight loss. Despite a short course of oral corticosteroids and antibiotics, his general condition worsened. Antiprotein- ase 3 c-ANCA were disclosed in serum. Chest computed tomography showed pulmonary nodules. Intranasal endoscopic biopsies demonstrated necrotising vasculitis with epi- thelioid and giant cells. Treatment included oral prednisone and intravenous cyclophos- phamide pulses. After a few days, serum creat- aminase concentrations abruptly increased to 198 µmol/l and urine analysis showed micro- scopic haematuria and proteinuria. High dose methylprednisolone pulses were then given, intravenous cyclophosphamide was changed to a 100 mg oral dose. Despite a short course of oral corticosteroids and antibiotics, the patient eventually achieved remission. In October 1996, abdomen computed tomogra- phy showed an intrasplenic lesion that was consistent either with a splenic infarct or he- mataoma (fig 1). The later 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 thrombophilic disorder could be found. Intravenous heparinate, diltiazem, dinitrosorbide and enalapril were given. Because of persistent left hypocondriender- serness, splenectomy was performed in Sep- tember 1997. Histological examination showed spleen infarction with organised haem- atoma and sequelae of vasculitis (fig 2).

**COMMENT**

Because they are vessels without collateral flow, occlusion of distal parenchymal splenic arteries leads invariably to infarction of the spleen. Of note, two of the three patients described by Wegener in 1936 had spleen involvement. The frequency of spleen involvement ranges from 50% to 100% of WG cases at time of diagnosis. To our knowledge, this is the first case of a renal transplant patient with pain in the lower limbs, related to tacrolimus treatment. Addi- tional case reports are needed to support this association.
showed massive or multiple areas of splenic necrosis, associated to a variable extent with central arteritis, splenic trabeculitis, follicular arteriolitis, disseminated parenchymatous granulomatous 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. A few recent reports of splenic involvement in WG provide histological analysis from live patients. An inaugural spontaneous rupture of a normal sized spleen with only subcapsular neutrophil infiltrate has been described in a patient who subsequently developed full blown WG. In another 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 initial 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.

**AMIDARONE INDUCED LUPUS**

Lupus related to amiodarone has not previously been described. We report on a patient who developed drug induced lupus (DIL) in association with amiodarone treatment. To our knowledge, this is the first report of amiodarone induced lupus (CD ROM: Medline, USA National Library: 1966–98).

A 12 year old white woman was admitted because of two weeks of pleuritic chest pain, dyspnea on exertion, and non-productive cough. She had malaise, intermittent fever, arthralgia, and weight loss for more than six months.

There was no history of Raynaud’s phenomenon, oral ulcers or photosensitivity. She had a six year history of arterial hypertension and atrial fibrillation treated with amiodarone, digital and amiodarone (200 mg orally 12 times daily) for the last three years.

Physical examination disclosed malar rash, an aortic systolic murmur (grade II/VI), and hyperventilation in both pulmonary baselines. Laboratory studies showed an erythrocyte sedimentation rate of 90 mm 1st h. Peripheral blood examination revealed a mild normochromic and normocytic anaemia (10 g/dl), normal white blood cells count (4000/μl), with lymphopenia (20 per cent), and normal platelet count (180 000/μl). Coagulation tests were normal. All serum chemistries, including thyroid function tests, creatinine phosphokinase, immunoglobulins, complement levels, and urine analysis were within normal limits. Coombs’ tests were negative. The Rheumatoid factor was 1:320. Circulating immune complexes (IgG-C1q) were positive. Antinuclear antibodies (ANAs) were positive at 1:640; anti-Ro, anti-La, anti-dsDNA, anti-Sm, anti-histone antibodies, antiphospholipid antibodies, cryoglobulins, C reactive protein, VDRL and Mantoux tests were negative. Blood and urine cultures were negative. Electrocardiogram was within normal limits, and the two dimensional echocardiogram showed mild aortic stenosis. Chest radiography revealed bilateral pleural effusions, without fibrosis or cardiomegaly. Pleural fluid was exudative, with lymphocytic predominance, and without cytological features for malignancy. Cultures of pleural fluid for bacteria, including *Mycobacterium tuberculosis*, were negative. Bone scan with technetium-99m showed increase uptake in hands, elbows, and knees. The histopathological examination of biopsy specimens of the skin, including indirect immunofluorescence stain, muscle and temporal artery did not show abnormal features.

The amiodarone was stopped and the patient progressively improved. No corticosteroids were given. On the third week she developed a transient relapse, with fever, malaise and with evidence of unilateral pleural effusion. One year after no clinical, analytical or radiological findings were present, and three years later she still remained free of symptoms, and the ESR, complete blood count, and radiological data were normal. The titre of ANA decreased but remained weakly positive at 1:40.

It is estimated that 3–7% of all patients with systemic lupus erythematosus (SLE) might have DIL. Clinical features of SLE and DIL are similar but there are certain distinguishing characteristics between them: the
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. Pleuropulmonary 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 test with amiodarone, secretion of leucocyte 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 non-specific 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 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 disorder (lymphopenia), and positive ANA test. Imputability criteria of amiodarone induced lupus are present on a semiological basis with classic features of DIL and on a chronological basis with disappearance of most of the symptoms after amiodarone withdrawal. The relapse could be explained because of the long elimination half time of the drug and, in consequence, the immune response might progress despite discontinuation of the treatment.


Antinuclear antibodies in relapsing polychondritis

The prevalence of antinuclear antibodies (ANA) in relapsing polychondritis (RP) has been recently reported by Zeuner et al and is 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, with special 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, spondyloarthropathy 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 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 nucleolar in one, perinuclear and nucleolar 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—agreeing with the negative results of tests for IgG antinucleosome 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.
There is no association between polyvalmy 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, parvovirus B19 has been described in recent reports. Among them are case reports on persistent parvovirus B19 infections, for instance in persons with underlying haemolytic anaemia, hydrops fetalis 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, myocarditis, systemic lupus erythematosus (reviewed by Anderson and Young), and rheumatoid arthritis. Furthermore, parvovirus B19 has been suspected to play a part in the aetiology of polyvalmy rheumatica (PMR). Because of the acute onset of PMR and its systemic symptoms an infection with parvovirus B19 is a relevant factor. Additionally, autoimmune processes have been demonstrated in both, PMR and parvovirus 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 erythroid 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 protein. As the NS1 protein is cytoytic and able to induce apoptosis, it probably plays a part in the pathogenetic process of the parvovirus B19 induced tissue damage. This is confirmed by the fact that antibodies against NS1 of parvovirus B19 are preferentially produced during chronic or persistent parvovirus B19 infections, for example in parvovirus B19 associated chronic arthritis.

To test the hypothesis whether PMR is associated with acute parvovirus B19 infection, we tested the seroprevalence of IgG antibodies against the two structural proteins VP1 and VP2 and against the non-structural protein NS1 in 110 PMR patients (patients 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 3 years, range: 0.6 years) 35 patients had no corticosteroids and 75 patients received on an average 15.2 (1.8) mg prednisolone/day. Furthermore, we investigated the prevalence of antibodies against VP1/VP2 (black bars) and NS1 (open bars) in control subjects and patients with polyvalmy rheumatica. The number of healthy controls was at least 20. *p=0.057 v seroprevalence of VP1/VP2. **p<0.001 v seroprevalence of VP1/VP2 in age matched healthy controls (groups 56–65 and 66–75 with 42 controls v 110 patients with PMR). With the presence of NS1 specific antibodies in healthy controls and patients with PMR, autoimmune processes may exist. In patients with NS1 specific antibodies in healthy controls the disease activity was scored with one point (the sum of the disease activity index was 56 (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, tumour necrosis factor, interleukin 2, and interleukin 10.

In view of these data, there was a positive association between NS1 and arthralgia. However, other symptoms and parameters of inflammation such as erythrocyte sedimentation 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 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 pathogenic factor in our patients with PMR.

Correspondence to: Dr J-C Piette.
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 micrometer disc to measure the migration of neutrophils from middle wells to outer (chemotaxis) and inner wells (chemokinesis) was used. Zymosan activated sera (patients or controls) were used as a source of C5a. Results 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 chemotaxis 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 be preferred to be used to differentiate chemokinesis from chemotactic migration.

There is marked heterogeneity in disease expression in men and women in BS and we reason 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 BS 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 normal 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 Senn’s modified in vivo assay. Others had found hyperchemotaxis to have been responsible for this phenomenon 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.

Table 1 Chemotactic indices in men

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<th>Mean (SD)</th>
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<tr>
<td>Behçet’s</td>
<td>54</td>
<td>6.4 (8.0)</td>
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<tr>
<td>Severe Behçet’s</td>
<td>9</td>
<td>11.3 (12.1)</td>
</tr>
<tr>
<td>Ankylosing spondylitis</td>
<td>9</td>
<td>5.9 (7.1)</td>
</tr>
<tr>
<td>Psoriasis</td>
<td>8</td>
<td>10.8 (11.0)</td>
</tr>
<tr>
<td>Healthy controls</td>
<td>37</td>
<td>10.0 (10.3)</td>
</tr>
</tbody>
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*Kruskal-Wallis one way analysis of variance, corrected for ties: χ²=2.1381, DF=4, p>0.05.

Table 2 Chemotactic indices in women

<table>
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<tr>
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<th>Number</th>
<th>Mean (SD)</th>
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<td>Behçet’s</td>
<td>28</td>
<td>7.2 (8.2)</td>
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<tr>
<td>Healthy controls</td>
<td>16</td>
<td>10.1 (10.2)</td>
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</tbody>
</table>

*p=0.032, p>0.05.

Noting these results it is evident that some of the confusion in the literature about neutrophil locomotion might have been responsible for this phenomenon by increasing the chemotactic activity in all groups studied. Further studies are needed to clarify these issues.

BİNNUR TUZUN
Department of Dermatology, Trakya University Medical Faculty, Edirne, Turkey

YALÇIN TUZUN
Department of Dermatology, Istanbul University Cerrahpaşa Medical Faculty, Istanbul, Turkey

SEBANATTİN YURDAKUL
Department of Rheumatology, Istanbul University Cerrahpaşa Medical Faculty, Istanbul, Turkey

YILMAZ OZYZGAN
Department of Ophthalmology, Istanbul University Cerrahpaşa Medical Faculty, Istanbul, Turkey

Correspondence to: Dr B Tüzün, Büyükçeklik Sokak Belde Ate 24/3, Nisanlı, Istanbul 80200, Turkey

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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 note review of 42 highly diverse 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 high risk 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 literature 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 neurologically active antigens, and antibodies 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 differ-
ence between patients with SLE and controls in terms of the IL10 SNP alleles frequencies. Differences have been de-
scribed with respect to microsatellites and one awaits confirmation from other popula-
tions or family studies. To our knowledge, a difference in IL10 production between pa-
tients 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 neuropsychiat-
ric disease patients and therefore they are described with a low IL10 producing haplotype, not a high IL10 pro-
ducing 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.

David Isenberg
Centre for Rheumatology, UCLH, London

Esther Crawley
Department of Molecular Pathology, UCLMS

Pat Woo
Department of Molecular Pathology, UCLMS

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 thrombocytopenic disease is too rigid, believing that different 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 cor-
rect 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 misclassified patients. If misclassification occurred in the sense that CNS 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 weak-
ens it.

It might be argued that thrombocytopenic 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 patients, 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 must be repeated in another group of patients. Interestingly, the increased preva-
ience of ATA in neuropsychiatric disease SLE patients has already been reported by Mok in a group of Chinese SLE patients. Currently we are investigating CPA-1 promoter haplotypes of the IL10 promoter polymorphisms 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 pro-
duction of IL10. We made this assumption in the light of previous studies stating that SLE as a whole is characterized by an increased innate IL10 production. It is wrong to extrapolate these conclusions to our popula-
tion. Because of the retrospective character of our study, we were not able to measure IL10 production in our populations and therefore 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 strati-
ing into neuropsychiatric disease SLE and non-neuropsychiatric disease SLE patients. Furthermore, it might be that in the popula-
tions mentioned above, there was an excess of patients with neuropsychiatric disease SLE.

The second explanation for the skewing of patients found in IL10 promoter polymorphisms might be that there is an increased susceptibility to 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 am-
biguous reports in the literature. In our laboratory, the -1082 A allele has been found to be associated with high IL10 production. In this light we have repeated our association study and we might re-
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 explana-
tions are equally speculative.

M J RoOD
T W HuIZENGA
Leiden University Medical Centre, Department of Rheumatology, Building 1, C4-R, PO Box 9600, 2300 RC Leiden, the Netherlands

5 Keijser V, Verweij CL, Hazes JM, Westen-
donk RLJ, Bridevaux PJ, Donnelly RJ. In-
ner differences in IL-10 production are present at the level of transcription and associ-
ated with haplotypes: association of IL-10 hap-
6 Turner DM, Williams DM, Sankaran D, Lazarus M, Sinnott PJ, Hutchinson N. An investigat-
7 Turner DM, Williams DM, Sankaran D, Lazarus M, Sinnott PJ, Hutchinson N. An investigat-
8 A man with intermittent fever and arthralgia

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Letters, Matters arising
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)e(s’) ears: an unusual presentation.1 Amazingly we have recently seen an almost identical, but less catastrophic case.

A 27 year old white man presented with a 24 hour history of ears so swollen and painful, that he could not lie in bed with them touching the pillow. One year previously he was diagnosed with primary antiphospholipid syndrome (APLS) after recurrent deep vein thromboses and a raised IgG anticardiolipin antibody at 92 iu/ml. He was subsequently given warfarin.

On admission this time, his INR, while taking warfarin 7 mg per day, was subtherapeutic at 1.6. Biopsy from his left ear lobe showed numerous fibrin thrombi with no associated vasculitis, consistent with thrombosis secondary to APLS.

His warfarin dose was increased to obtain an INR between 3 and 4. Within a few days he had recovered and was discharged home well.

Perhaps Hughes’ ears should be renamed Norfolk ears?

DONNCHA O’GRADAIGH
DAVID SCOTT
Department of Rheumatology, Norfolk and Norwich Hospital, Brunswick Road, Norwich NR1 3SR

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 thrombosis 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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