MATTERS ARISING

Heavy cigarette smoking and RA

Hutchinson et al concluded that prolonged heavy cigarette smoking, but not smoking itself, is strongly associated with rheumatoid arthritis (RA), particularly in patients without a positive family history. The authors proposed that increased rheumatoid factor (RF) production resulting from heavy smoking exposures explains, in part, the relation of increasing cigarette pack years smoked and the greater association with RA.

No data were presented in that study on the extent of smoking and RF positivity or its titres. The proposal would be strengthened if heavy smoking was associated with RF, either when clinical disease began or when patients were studied at hospital rheumatology clinics. Others have proposed that tobacco smoke exposure triggers RF production, thereby contributing to the onset of RA. However, no significant association was seen between current smoking and IgM RF positivity in the earlier multicase family study, either among 41 patients with RA or their non-rheumatoid relatives -- 168 blood and 36 non-blood relatives.

Although heavy cigarette smoking may be associated with RF during clinical disease, it is still relevant to determine whether it is associated with RA, either in the presence or absence of RF positivity. A further question remains as to the sequence of occurrences. Does heavy smoking first induce RF production, which later contributes to RA? Alternatively, might RA be induced first and RF produced later? Prospective, rather than cross sectional, studies are needed to answer these questions. Prospective data suggest that reported smoking of 30 or more cigarettes daily (CS 30+/day) predisposes to RA risk independently from RF positivity or positive family history.

These complex relationships were investigated in a case-control study nested within a community based cohort (n=21,061 adults) enrolled in 1974. For each of the 18 male and 36 female unrelated incident patients who satisfied American College of Rheumatology criteria for RA, identified in 1994, four controls from the entry cohort were matched for age, sex, and race (all white subjects). Table 1 shows the number of patients before they developed RA and their respective controls who reported heavy cigarette smoking (CS 30+/day) at baseline. Heavy smoking was not associated with pre-RA RF+ status, but was associated significantly (p=0.001) with patients who were RF− at baseline. The highest observed odds ratio (OR) was in 15 sets in which the patient was RF− at baseline and continued to be RF− after active disease developed [OR 21.5, 95% CI 1.9 to 225, p<0.005]. The ORs were similar for sets in which the patients had positive or negative FDR status, but was significant (p=0.012) only in the larger FDR− subset (table 1).

The hypothesis that cigarette smoking contributes to RA partly by RF production is attractive. However, critical substantiation in prospective and cross sectional studies is currently lacking. Available prospective data (table 1) suggest that alternative mechanisms may be more likely. For example, long term cigarette smoking causes general vascular endothelial damage, and smoking is significantly associated with vasculitis in active RA. Hence, it was proposed to contribute to RA risk through its endothelial and microvascular effects, perhaps through nitric oxide pathways, rather than by RF production primarily.

Whether or not heavy smoking differentially associates with RA depending upon family history of disease is as complex as the dilemmas of RF contributions to onset (table 1). Our female patients had a significantly (p=0.001) younger mean age at clinical onset (45.6 years) than their counterparts (57.1 years). Might such earlier onset of RA among patients with a positive family history, as also noted by Hutchinson et al, have influenced their behaviour to lower cumulative exposures to cigarette smoking compared with their counterparts?

Table 1 Numbers of pre-RA cases and matched controls reporting heavy cigarette smoking (CS 30+/day) at baseline by relevant categories and odds ratios (ORs) with 95% confidence intervals (95% CIs) for developing ACR+ rheumatoid arthritis

<table>
<thead>
<tr>
<th>Categories</th>
<th>Pre-RA cases</th>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>CS 30+/day (%)</td>
<td>Number</td>
<td>CS 30+/day (%)</td>
<td>OR</td>
<td>95% CI</td>
</tr>
<tr>
<td>Total subjects</td>
<td>54</td>
<td>13 (24)</td>
<td>216</td>
<td>19 (9)</td>
<td>3.3</td>
<td>1.4 to 7.7</td>
</tr>
<tr>
<td>Men</td>
<td>18</td>
<td>8 (44)</td>
<td>72</td>
<td>14 (19)</td>
<td>3.3</td>
<td>1.0 to 11.4</td>
</tr>
<tr>
<td>Women</td>
<td>36</td>
<td>5 (14)</td>
<td>144</td>
<td>5 (3)</td>
<td>4.5</td>
<td>1.0 to 19.4</td>
</tr>
<tr>
<td>FDR+*</td>
<td>11</td>
<td>5 (45)</td>
<td>44</td>
<td>9 (20)</td>
<td>3.2</td>
<td>0.7 to 16.3</td>
</tr>
<tr>
<td>FDR−</td>
<td>43</td>
<td>8 (19)</td>
<td>172</td>
<td>6 (6)</td>
<td>3.7</td>
<td>1.2 to 11.2</td>
</tr>
<tr>
<td>Pre-RA RF+</td>
<td>12</td>
<td>2 (17)</td>
<td>48</td>
<td>0 (0)</td>
<td>5.0</td>
<td>0.2 to 7.9</td>
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<tr>
<td>Pre-RA RF−</td>
<td>42</td>
<td>11 (26)</td>
<td>168</td>
<td>12 (7)</td>
<td>4.6</td>
<td>1.5 to 10.2</td>
</tr>
<tr>
<td>Entry and post-RA RF−</td>
<td>15</td>
<td>4 (27)</td>
<td>60</td>
<td>1 (2)</td>
<td>21.5</td>
<td>1.9 to 225.5</td>
</tr>
<tr>
<td>Conversion of pre-RA RF− to RF+†</td>
<td>27</td>
<td>7 (26)</td>
<td>108</td>
<td>7 (6)</td>
<td>5.1</td>
<td>1.4 to 18.5</td>
</tr>
<tr>
<td>FDR− and pre-RA RF−</td>
<td>33</td>
<td>7 (21)</td>
<td>132</td>
<td>5 (4)</td>
<td>6.8</td>
<td>1.8 to 27.4</td>
</tr>
<tr>
<td>Mild course of RA§</td>
<td>19</td>
<td>8 (42)</td>
<td>76</td>
<td>11 (14)</td>
<td>4.3</td>
<td>1.3 to 15.1</td>
</tr>
<tr>
<td>Non-mild course of RA§</td>
<td>35</td>
<td>5 (14)</td>
<td>140</td>
<td>8 (6)</td>
<td>2.8</td>
<td>0.7 to 10.2</td>
</tr>
</tbody>
</table>

*FDR+ is a positive history of RA in a first degree relative as determined for patients in 1997, and reported in 618 (33%) male patients and 5/36 (14%) female patients.
†Conversion of RF− at baseline to RF+ after clinical onset of RA.
‡Course of RA over 3–20 (median 11) years of clinical disease was determined by the patients’ rheumatologist according to predefined criteria.
§No association of CS 30+/day with pre-RA RF+ (p=0.99).

Authors’ reply

We read the letter of Masi et al with interest and are pleased to have an opportunity to discuss the questions they have raised. Our study group was derived from an area of northwest England made up principally of people in a lower socioeconomic class, in contrast with other UK studies. Although we did not record the presence of rheumatoid factor (RF) in our patients for the purpose of this study, seropositivity in our RA patient group was high, approximately 80–90%. This is comparable with Glasgow, an area in Scotland with a similarly high level of social deprivation, where 96% of randomly selected patients with RA were found to be seropositive. We therefore decided to consider the role of smoking history of familial and sporadic patients with RA rather than compare seropositive and seronegative patients. Published reports almost uniformly suggest that cigarette smoking is associated with seropositive rather than seronegative RA. Cigarette smoking is associated with the development of seropositivity in healthy subjects and, furthermore, there is a related phenomenon for the development of seropositive RA. It has also been established that the development of seropositive RA is greatly increased in healthy subjects who are persistently seropositive. Wolfe noted a significant trend in patients with RA of...
increasing RF titre with pack years smoked. Yet although the development of rheumatoid joint erosions, nodules, and disability was significantly increased by cigarette smoking, he found that this was independent of RF production.

We suspect that cigarette smoking and RF are strongly interlinked, but other mechanisms, as suggested by Masl, may also be at work. For example, cigarette smoke contains numerous oxidising agents that can inactivate α-proteinase inhibitor (α-PI), the natural inhibitor of neutrophil elastase (NE), a serine protease that can degrade articular cartilage. Cigarette smoke can also prime neutrophils to degranulate and discharge, activate macrophages to produce matrix metalloproteinases, up regulate production of interleukin 1β and interleukin 8 and down regulate interleukin 1 receptor antagonist, and interleukin 6. Furthermore, cigarette smoking induces disease processes in a specific dose dependent fashion (independent of current smoking status), such as pulmonary emphysema, in which there is increased neutrophil priming, in which there is increased α-proteinase inhibitor (α-PI) and α-PI-NE complexes (indica- tive of increased NE activity). Therefore a heavy smoker may have an otherwise benign short lived inflammatory arthritis modified by the mechanisms outlined above and develop RA.

Whether RA increases or decreases cigarette consumption remains uncertain. Our controls had a pack year total estimate at entry to the study and not at the time of their disease onset. We are, however, unaware of any data to suggest that RA increases cigarette consumption. Indeed, a study by Harrison et al. has observed that 18% of all smokers with polyarthritis stopped smoking within six months of their disease onset as opposed to <1% of non-smoking patients who started smoking during this period.

Other important questions remain unanswered. For example, does increased cumulative cigarette consumption increase RA susceptibility independently of RF production? (Data not presented by Masl et al. consider cigarette consumption at one time point.) If so, do these subjects have an increased prevalence of circulating levels of α-PI-NE complexes, high levels of oxidised α-PI and α-PI-NE complexes (indicative of increased NE activity)? Therefore a heavy smoker may have an otherwise benign short lived inflammatory arthritis modified by the mechanisms outlined above and develop RA.

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Rheumatoid arthritis

Associated with ulcerative colitis

I was interested to read the letter on “Rheumatoid arthritis associated with ulcerative colitis” by Boyer et al. published recently in the Annals, and would like to make the following comments. Studies in patients with established Crohn’s disease (CD) have generally supported the presence of Th1 responses. In ulcerative colitis, although enhanced humoral immunity has been described, evidence for classical Th2 predominance remains to be demonstrated. On the other hand, it has been shown that interleukin 15 is overexpressed in the inflamed mucosa of patients with inflammatory bowel disease at the level of macrophages. Similar findings have been reported in patients with rheumatoid arthritis. As shown in this case, it is sometimes quite difficult to distinguish by clinical manifestations alone between two diseases which start almost at the same time. However, the presence of a positive rheumatoid factor and DR1 genotype are arguments for RA. The existence of polymorphisms affecting other genes may take place in such type of arthritis. Results obtained with anti-tumour necrosis factor monoclonal antibodies to prevent mucosal inflammation in CD, suggest that such an approach may also be of interest in this unusual situation.
Intramuscular methotrexate in inflammatory rheumatic disease

We read with great interest the recent letter entitled 'Parenteral methotrexate worth trying' by Osman and Mulherin. There has been an increased use of intramuscular methotrexate (IM-MTX) in our department in the past two years, leading to an increased workload in the nurse-led monitoring clinics and in the cost. This has prompted us to review the clinical utility of switching patients to IM-MTX. In addition, we have recorded patients' experiences, focusing chiefly on patient satisfaction, with this treatment.

Medical case notes of 31 patients who had started treatment with IM-MTX, identified from our database, were examined. The clinical diagnosis, previous drug treatment, reason for changing to IM-MTX, etc., were noted. In addition, the patients were asked to complete a questionnaire, looking at patient satisfaction and preferred venue for injections (monitoring clinic or local doctor's surgery/home).

Our patient cohort was made up of 24 patients with rheumatoid arthritis, four with seronegative spondyloarthropathy, two with systemic lupus erythematosus, and one with undifferentiated connective tissue disease. Most patients had been receiving a previous disease-modifying antirheumatic drug (DMARD), including 24 patients taking oral MTX. Reasons for changing to IM-MTX treatment were as follows: side effects in 11 patients, loss of efficacy in 12, and poor oral compliance in eight. The median starting and maintenance doses were 10 mg weekly (range 5–17.5) and 15 mg weekly (range 10–17.5), respectively. During the study, five patients discontinued IM-MTX: two because of side effects, one developed multiple nodulosis, one did not attend for follow up, and one died from an unrelated cause. Median duration of treatment in the remaining 26 patients was 10 months (range 1–20). Significant improvement in disease activity, as measured by erythrocyte sedimentation rate and C-reactive protein, was seen after three months (p <0.01), with improvement maintained after nine months (p=0.01) of IM-MTX treatment. Twenty four of the 26 current patients completed the questionnaire, and on a satisfaction scale of 1–5, the average rating was 4.2, indicating that patients were either very or extremely satisfied with their IM-MTX treatment. Fourteen patients preferred their injections in the monitoring clinic, five preferred their local doctor's surgery, and five patients expressed no preference. Only three patients stated that weekly clinic visits were inconvenient.

In conclusion, we found that IM-MTX was effective and well tolerated. In addition, our observations further support the switch to parenteral MTX in those patients previously intolerant or who have failed to respond to oral MTX. Surprisingly, most patients preferred to have their injections in the monitoring clinic. The reason for this is not clear. Possibly, the patients felt more confident if cytotoxic drugs were given by a trained healthcare professional, although a previous study by Arthur et al has found that self-injection of DMARDs is safe, convenient, and time and cost saving to the patient. We are currently circumventing the administration of parenteral MTX in the monitoring clinic with self-administration in the community. Regardless of the outcome, the role of parenteral MTX in rheumatic diseases is likely to expand and the cost and resource implications of continuing with this treatment need to be discussed.

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Author's reply

It is gratifying that Drs Burbage, Gupta, and Lim have also demonstrated efficacy and high levels of patient satisfaction associated with parenteral methotrexate in their study. There remains a surprising dearth of reported information about this useful and widely prescribed development in rheumatology practice. Because of the burgeoning number of patients being treated in this way, it is creating increasing logistical difficulties. It represents an unlicensed use of this drug, which can cause anxiety among less experienced practitioners. Issues related to the appropriate disposal of the residual cytotoxic waste have also caused considerable difficulties. Although the risks of self-injection, pre-, and monitored within primary care, is an extremely cheap and effective treatment for rheumatoid arthritis, this is certainly not the case for parenteral methotrexate if it is necessary for it to be prescribed and administered in a costly secondary care setting. As primary care buckles under increasing demands on its resources, cost and logistical issues, rather than issues of efficacy, may curtail the deserved role of parenteral methotrexate in current and future rheumatology practice.

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Epidemiology of vasculitis in Europe

We recently compared the annual incidence of primary systemic vasculitis (PSV) in two different regions of Europe (Norwich, UK (latitude 52°N) and Lugo, Spain (latitude 43°N)). Wegener's granulomatosis (WG) was more common in Norwich (10.6/million) than in Spain (4.9/million), though the overall incidence of PSV was similar. This supports the idea that environmental factors may be important in the aetiopathogenesis of PSV. To extend our observations we have now studied the incidence of PSV in northern Europe (Tromsø, Norway (latitude 70°N)). The same methodology was used as in the previous study. All new patients presenting with PSV between 1 January 1988 and 31 December 1998 were identified in the three centres. WG, Churg-Strauss syndrome (CSS), and polyanteritis nodosa (PAN) were classified by the American College of Rheumatology (1990) criteria, and microscopic polyangiitis (MPA) and classical PAN by the Chapel Hill consensus definition. Incidence figures were calculated using the Poisson distribution for the observed number of cases.

Table 1 shows the results obtained. The overall incidence and patterns of vasculitis were similar in the three regions, but there were some differences. MPA was less common in Tromsø than in the other two regions, and there was a trend for WG to be more common in the north. CSS was more common in Norwich than in the other two regions. In all areas and all disease categories the incidence was greater in men than women and showed a peak incidence at age 65–74. Overall, WG is the most common type of PSV and classical PAN the rarest.

These results support the notion suggested by doctors interested in vasculitis that there are geographical differences in the incidence of WG, MPA, and CSS and, in particular, there is an inverse relation between the incidence of WG and MPA. In clinical practice MPA and WG can be difficult to distinguish. Possibly, despite our best attempts to harmonise the application of classification criteria/definitions, there were still differences in approach. The reason for the apparent excess of CSS in Norwich is unclear.
but might reflect local environmental factors. The aetiopathogenesis of PSV is unknown, but both genetic and environmental factors are likely to be important. The clinically observed differences between MPA and WG may reflect interaction of varying trigger factors on a heterogeneous genetic background. It should therefore not be assumed that the same triggers operate in all regions of Europe.

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Anti-U3 snRNP antibodies in localised scleroderma

Localised scleroderma (LSc) is a connective tissue disorder usually limited to the skin and subcutaneous tissue, but it sometimes affects the muscle beneath the cutaneous lesions. The absence of Raynaud’s phenomenon, acrosclerosis, and internal organ involvement differentiates LSc from systemic sclerosis (SSc). 1 LSc has been reported to be accompanied by a variety of abnormal immune reactions, such as the presence of antinuclear antibody, rheumatoid factor, anti-single stranded DNA antibody (anti-ssDNA), and antihistone antibody. 2

In our laboratory an indirect immunofluorescence-resonant study showed nucleolar staining in the serum samples of some patients with LSc. Although autoantibodies to nucleolar antigens have been well described in patients with SSc, 3 these antibodies have not been determined in patients with LSc, and the incidence of anti-U3 snRNP antibodies has not been described previously. In this study we investigated the prevalence of anti-U3 snRNP antibodies in patients with LSc using RNA immunoprecipitation, and examined the clinical and laboratory features of patients with LSc. In addition, we examined the serum samples of patients with SSc and control subjects matched for age and sex with the patients with LSc.

We found anti-U3 snRNP antibodies in 2/70 (3%) serum samples from the patients with LSc (fig 1). One of the 28 patients (4%) with linear scleroderma and one of the 20 patients (5%) with morphea had anti-U3 snRNP antibodies (table 1). This prevalence was smaller than that in patients with SSc, 4 but there was no significant difference. RNA immunoprecipitation using silver staining of the RNA is not as sensitive as other methods—for example, probing with a labelled U3 snRNP probe. Possibly, some anti-U3 snRNP positive serum samples might have been missed. The three patients with SSc and with anti-U3 snRNP antibodies were diagnosed as having diffuse cutaneous SSc, and they tended to be older and have disease of longer duration than patients with LSc; the difference was not significant. In this study the titres of antinuclear antibodies in the two patients with LSc with anti-U3 snRNP antibodies were 1/320 and 1/640, respectively. The titres of this antibody did not change in a follow up study. A previous study reported that 43/46 patients with SSc and anti-U3 snRNP antibodies produced bright nucleolar staining with titres >1/640. 5 Taken together, the titres of antinuclear antibodies in patients with LSc were as high as those in SSc. Patients with LSc and with anti-U3 snRNP antibodies did not have sclerodactyly or nailfold bleeding. Raynaud’s phenomenon did not occur at any time in the course of their disease. These results suggest that anti-U3 snRNP antibodies occur in patients with LSc as well as in those with SSc.

The patients with LSc and anti-U3 snRNP antibodies tended to be younger, have shorter disease duration, have fewer sclerotic lesions, and have fewer affected areas than those without, but there was no significant difference. We could not find any correlations with clinical manifestations, probably because of the small number of patients. In earlier investigations of systemic sclerosis, anti-U3 snRNP antibodies did not seem to have any distinctive clinical and laboratory correlation. A large group of patients with SSc was assembled and the clinical features of the patients with anti-U3 snRNP antibodies investigated; various clinical, associations were reported. 6 A large group of patients with LSc might similarly disclose clinical associations of patients with LSc with anti-U3 snRNP antibodies.

Previous studies have shown that anti-U3 snRNP antibodies rarely coexist with other autoantibodies. 7 Okano et al reported that each distinctive serum antibody is associated with its own unique combination of clinical features. 8 In our study antihistone antibodies or anti-ssDNA did not coexist with anti-U3 snRNP antibodies, and no other autoantibodies were detected by RNA immunoprecipitation. LSc may be a heterogeneous condition with diverse autoantibodies, and these antibodies may have a mutually exclusive status.

In conclusion, we showed for the first time that anti-U3 snRNP antibodies are found in patients with LSc by RNA immunoprecipitation. We found no correlations between clinical and laboratory manifestations in the present study. Our study suggests that the presence of anti-U3 snRNP antibodies is one of the serological abnormalities in LSc. A study of more patients may assist in showing a distinctive association between anti-U3 snRNP antibodies and the clinical and laboratory features of patients with LSc.

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Table 1 Frequencies of antibodies to U3 small nuclear ribonucleoprotein (snRNP), detected by immunoprecipitation, in patients with localised scleroderma (LSc), systemic sclerosis (SSc), and control subjects

<table>
<thead>
<tr>
<th>Antibody</th>
<th>LSc (%)</th>
<th>SSc (%)</th>
<th>GM (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anti-U3 snRNP</td>
<td>2/70 (3)</td>
<td>43/46 (94)</td>
<td>0/22 (0)</td>
</tr>
</tbody>
</table>
| LSc = localised scleroderma; GM = generalised morphoea; M = morphea; SSc = systemic sclerosis.

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Figure 1 RNA immunoprecipitation. Urea (7 M) polyacrylamide gel electrophoresis of phenol-extracted immunoprecipitates from HeLa cell extracts were stained with silver. Total nuclear acids, with 7-2RNA, 8-2RNA, and the U snRNA regions are indicated. Serum samples used for immunoprecipitation included: lane 1, total RNA; lane 2, healthy control serum; lanes 3–4, patients with LSc and with anti-U3 snRNP antibodies; lane 5, patient with SSc and anti-U3 snRNP antibodies; lane 6, patient with SSc and anti-U3 snRNP antibodies; lane 7, patient with systemic lupus erythematosus and anti-Sm antibodies.

Telomerase activity in peripheral blood mononuclear cells from patients with SLE

Telomerase is a reverse transcriptase that adds the telomeric sequence to the terminal of chromosomes, prevents shortening of telomeres, and maintains the complete telomeric structure. It has been recently reported that an increase in telomerase activity is associated with the activation of lymphocytes, and, in general, much attention has been paid to the role of telomerase in immunopathology. Katayama et al reported the telomerase activity in patients with systemic lupus erythematosus (SLE). They analysed 17 patients with SLE, and the telomerase activity in peripheral mononuclear cells was increased by 64.7%. Thus, in this study, we divided patients with SLE into treated and untreated groups, and measured the telomerase activity of peripheral mononuclear cells.

Thirteen patients with SLE (1 man, 12 women) with a mean (SD) age of 30.7 (6.5) years (range 19–61) were enrolled in this study. All patients fulfilled the 1997 revised American Rheumatism Association criteria. As a control group, 10 normal volunteers, six women aged 19–41 and four men aged 30–37, were also included in the study. After informed consent was obtained, 10 ml of peripheral blood was taken and heparinised. Telomerase activity was measured by a TRAP assay method. The telomerase activity was expressed by a ratio of the entire TRAP ladder to an internal control band.

Table 1 shows the telomerase activity level in patients with systemic lupus erythematosus (SLE). Significant differences (p=0.006) were detected in the telomerase activity level between the control group, untreated SLE group, and treated SLE group, by Kruskal-Wallis test with a significance level of 5%. For multiple comparisons the Mann-Whitney test was used to evaluate intergroup differences after lowering the significance level using Bonferroni’s technique. The p value was 0.002 between the control group and untreated SLE group, 0.005 between the untreated SLE group and treated SLE group, and 0.118 between the control group and treated SLE group.

Table 1. Telomerase activity and clinical laboratory parameters and SLE disease activity index (SLEDAI).

| Patient No | Age (y) | Sex | Telomerase activity (WBC) | Lymph. (10^8/µl) | Plt. (10^8/µl) | CH50 (µ/ml) | IC (C1q) | dsDNA (µprot.) | ANA | IgG (µ/ml) | IgA (µ/ml) | IgM (µ/ml) | SLEDAI | Treatment (pred./mg/day) |
|------------|---------|-----|--------------------------|-----------------|-------------|------------|----------|---------------|------|------------|-------------|-----------|--------|----------------|--------------------------|
| 1          | 23      | M   | 1.96                      | 27000           | 800         | 158.0      | 31.2      | 1.5           | 5   | 640        | 14.69       | 0.53      | 10     | 2,4,5,8     | None                      |
| 2          | 36      | F   | 0.76                      | 29000           | 900         | 48.0       | 23.6      | 9.16          | 15   | 1280       | 12.82       | 1.68      | 0.65   | 12         | 2,4,8        |
| 3          | 28      | F   | 0.82                      | 37000           | 1200        | 243.0      | 29.2      | 72            |    | 640        | 18.98       | 3.89      | 1.98   | 2          | None         |
| 4          | 61      | F   | 0.47                      | 36000           | 400         | 201.0      | 34.8      | 9.9           | 12  | 5120       | 31.67       | 3.46      | 0.76   | 16         | 2,3,4,5,8    |
| 5          | 20      | F   | 0.29                      | 58000           | 600         | 211.0      | 34.8      | 9.9           | 12  | 5120       | 31.67       | 3.46      | 0.76   | 16         | None         |
| 6          | 24      | F   | 0.25                      | 87000           | 1400        | 243.0      | 29.2      | 72            |    | 640        | 18.98       | 3.89      | 1.98   | 2          | None         |
| 7          | 53      | F   | 0.40                      | 56000           | 1200        | 243.0      | 29.2      | 72            |    | 640        | 18.98       | 3.89      | 1.98   | 2          | None         |
| 8          | 39      | F   | 0.05                      | 68000           | 1300        | 248.0      | 29.2      | 72            |    | 640        | 18.98       | 3.89      | 1.98   | 2          | None         |
| 9          | 41      | F   | 0.18                      | 70000           | 1200        | 243.0      | 29.2      | 72            |    | 640        | 18.98       | 3.89      | 1.98   | 2          | None         |
| 10         | 36      | F   | 0.06                      | 79000           | 1400        | 209.0      | 34.8      | 9.9           | 12  | 640        | 16.63       | 3.55      | 1.39   | 4         | 7            | 30 mg/day    |
| 11         | 56      | F   | 0.04                      | 79000           | 1200        | 219.0      | 34.8      | 9.9           | 12  | 640        | 16.63       | 3.55      | 1.39   | 4         | 7            | 30 mg/day    |
| 12         | 44      | F   | 0.10                      | 56000           | 1400        | 243.0      | 29.2      | 72            |    | 640        | 18.98       | 3.89      | 1.98   | 2          | None         |
| 13         | 36      | F   | 0.38                      | 90000           | 1100        | 218.0      | 34.8      | 9.9           | 12  | 640        | 16.63       | 3.55      | 1.39   | 4         | 7            | 30 mg/day    |

WBC = white blood cell count ([/µl]; Lymph. = lymphocyte count ([/µl]; Plt. = platelet count ([/µl]); CH50 = serum complement activity (U/ml); IC (C1q) = serum immune complex level with a C1q solid phase method ([µg/ml]); dsDNA = anti-double stranded DNA antibody level (U/ml); u-prot. = urine protein analysis with a test paper method; ANA = antinuclear antibody (titre); IgG = immunoglobulin G level (µ/ml); IgA = immunoglobulin A level (µ/ml); IgM = immunoglobulin M level (µ/ml); SLEDAI = SLE disease activity index. Symptom: 1 = central nervous system lupus; 2 = arthritis; 3 = myositis; 4 = nephritis; 5 = new rash; 6 = alopecia; 7 = serositis; 8 = fever.

1 Counter CM. The roles of telomeres and telomerase in cell life span. Mutat Res 1996;366:45–63.
Treatment of ankylosing spondylitis with infliximab

In January 2000 a 35 year old man presented with severe ankylosing spondylitis (AS), diagnosed in 1981. The Bath Ankylosing Spondylitis Disease Activity Index (BASDAI) was 6.0, the Bath Ankylosing Spondylitis Functional Index (BASFI) was 3.0, and on a 1–10 visual analogue scale (VAS) for pain in the previous two months he had a score of 6.

Conventional radiography showed typical signs of AS. Magnetic resonance imaging (MRI) detected inflammatory activity in the ileosacral joints by the stimulation to antigen receptor. Blood and ESR, all variables remain normal up to the end of one year's treatment.

We started treatment with infliximab, a monoclonal antibody (IgG1) directed against tumour necrosis factor α (TNF-α), at a dose of 5 mg/kg body weight. Intravenous infusions were given in weeks 0, 2, 6, and 10 owing to a mild upper respiratory tract infection, which abated after two weeks without specific treatment.

This case report documents the first long term application of infliximab in a patient with AS. Two previous studies reported effective treatment of a total of 22 patients with AS with three infusions of infliximab at a dose of 5 mg/kg body weight.

The pharmacological basis for TNF-α inhibitory treatment in AS is the detection of TNF-α mRNA and TNF-α protein in biopsy specimens of ileosacral joints of patients with active AS. In rheumatoid arthritis (RA) and Crohn’s disease (CD), several TNF-α inhibitors seem to be successful in significantly reducing inflammatory activity.

Theoretically, up regulation of the TNF-α receptors and subsequent tachyphylaxis might be expected upon constant blockade of the agonist. This has not been noted in studies on infliximab, etanercept, and D2E7 in RA, CD, and psoriatic arthritis (PA) during long term treatment, even when constant therapeutic plasma levels are maintained.

This case report suggests this is true also for patients with AS. In summary, we present the case of a patient with AS effectively and safely treated with infliximab over a period of more than one year. This indicates that treatment of AS with TNF-α inhibiting substances may have equal long term safety and long term benefits on peripheral and spinal joint function as does treatment of RA, CD, and PA. Randomised controlled double blind studies are needed to investigate this in further detail.
grade fever. Her medical history was otherwise unremarkable except for a hereditary cerebellar cortical degeneration. Her family history was negative for rheumatic diseases, including spondarthropathy.

Physical examination showed tenderness and limitation of cervical and shoulder movement. The typical gait and abnormal stance of cerebellar ataxia were also present.

Laboratory evaluation disclosed an erythrocyte sedimentation rate (ESR) of 72 mm/1st h (Westergren) and a C reactive protein (CRP) concentration of 80 mg/l (normal <5). Tests for rheumatoid factor, antinuclear antibodies, and serum tumour markers were negative, and HLA typing did not show the B27 antigen.

Methyldiprenisolone at a dose of 16 mg/day was started and symptoms rapidly disappeared. ESR and CRP were normal after one month of treatment.

Nine months after starting treatment, when the dose of methyldiprenisolone was 6 mg/day, the patient experienced pain in her shoulder girdle and right foot. Physical examination showed an enlarged and painful right retrocalcaneal bursa. There was no pain and swelling along her right Achilles tendon and at its calcaneal insertion. Magnetic resonance imaging (MRI) showed an enlarged retrocalcaneal bursa with synovitis and the typical gait and abnormal stance of spondarthritis which is a disease of the entheses, retrocalcaneal bursitis often occurring in association with Achilles enthesis. In contrast, retrocalcaneal bursitis tends to occur in isolation in rheumatoid arthritis, suggesting that the synovial membrane at the top is the primary site of inflammation.

Figure 1 Sagittal T1 (A) and axial T2 (B) images showing the distension of the retrocalcaneal bursa by fluid collection (arrows) together with normal Achilles tendon and enthesis.

Retrocalcaneal bursitis in polymyalgia rheumatica

Polymyalgia rheumatica (PMR) is a relatively common disease of the elderly affecting the synovial membrane.1 Recent studies have emphasised the prominent involvement of the extra-articular synovial structures in both proximal and distal regions of both the arms and legs.2 In the distal part of the arms tenosynovial membrane inflammation is responsible for carpal tunnel syndrome, distal swelling of hands and feet with or without pitting oedema, and localised episodes of distal tenosynovitis.3 We recently observed the case of a patient with PMR showing retrocalcaneal bursitis, which we describe briefly here.

A 68 year old woman was referred to us for evaluation of a three month history of marked aching and morning stiffness in her neck, shoulders, and hip girdles associated with low peripheral and distal inflammatory processes of PMR has only recently been demonstrated.4 The distal manifestations of PMR include tenosynovitis in addition to joint synovitis.4 Extensor tenosynovial sheath involvement, which may give swelling with pitting oedema over the dorsum of the hands and feet, is common and has been recorded by MRI.5 Tenosynovitis under the transverse carpal ligament may cause carpal tunnel syndrome.7 The involvement of both flexor, posterior tibial and peroneal tendons may occur and has been documented with MRI.8

To the best of our knowledge retrocalcaneal bursitis has never been reported in patients with PMR. Chuang et al found “bursitis-tendinitis” in 48/96 (50%) patients with PMR.9 Although they considered these as part of the disease, no mention of the affected bursae was made in their article. Possibly, some of the 48 patients developed retrocalcaneal bursitis. The retrocalcaneal bursa differs from other deep bursae, such as the subacromial and subdeltoid bursa and the gastrocnemius-semimembranosus bursa. The retrocalcaneal bursa an integral part of the Achilles tendon. In contrast, retrocalcaneal bursitis tends to occur in isolation in rheumatoid arthritis, suggesting that the synovial membrane at the top is the primary site of inflammation. The same may be valid for PMR. Our patient had no clinical sign of Achilles tendon involvement and MRI showed no sign of enthesis, that is to say, tendon swelling and bone oedema.

In conclusion our report suggests that the synovial membrane of distal bursae may also be affected in PMR.

Comorbidities and lifestyle, reproductive factors, and environmental exposures associated with rheumatoid arthritis

The authors regret that an error is present in the fourth paragraph of the “Results” section. The first sentence should read: “A non-significant increased risk of RA was seen in both men and women who consumed at least 75 ml of alcohol per drinking session at the age of 25 compared with total abstainers” and not “750 ml” as stated. (Note: Corrections printed in the journal also appear on the Annals web page (www.annrheumdis.com) and are linked to the original publication.)

EULAR training bursaries
Up to 10 scholarships for clinical or laboratory work (3–6 months) in a foreign unit will be made available for applicants from countries where there is a clear educational need. The value of each bursary is 7000 euros. Candidates should be under 35 years of age and the grant will not be made if the applicant is already abroad in training. A curriculum vitae, a statement of qualification, a project outline, and a written confirmation from the host hospital that training is possible must be received at the EULAR Secretariat no later than 28 February 2002.

EULAR prize
The prize, to the value of 30 000 euros, is awarded by EULAR for an outstanding contribution in the field of rheumatology in recent years. The competition is open to both scientists and clinicians working in the field of rheumatology. The prize will be awarded for the work of a group and not to an individual person. The documents submitted in support of an entry may take the form of an essay or a description of the project. The prize will not be awarded for a publication or an abstract. The essay with the CV of the head of the group and a publication list must be received at the EULAR Secretariat in Zurich no later than 28 February 2002.

EULAR young investigator awards
Three awards for a scientific (clinical or basic) research project of 30 000 euros each, will be made available for laboratory/research work in the field of rheumatology. Candidates must submit a project outline, a CV, and expense budget and should be under 35 years of age. Entries for the Young Investigator Awards must be received at the EULAR Secretariat in Zurich no later than 28 February 2002.

AMGEN/EULAR young investigator award
AMGEN (Europe) will make an award of 30 000 euros for a scientific (clinical or basic) research project in the area of rheumatoid arthritis. The prize money is intended to support laboratory/research work. Candidates must submit a project outline, a CV, and expense budget and should be under 35 years of age. Entries for the award must be received at the EULAR Secretariat in Zurich no later than 28 February 2002.

Endowment of the awards
The EULAR prize, the EULAR young investigator awards, and the AMGEN/EULAR young investigator award will be endowed at the opening ceremony of the Annual European Congress of Rheumatology to be held in Stockholm, Sweden, on 12 June 2002.

www.eular.org
Bursaries, the EULAR prize, and the Young Investigator Awards are also announced on www.eular.org
Applications should be forwarded to:
EULAR Executive Secretariat, Witikonerstrasse 15, CH-8032 Zurich, Switzerland
Tel: +41 1 383 96 90; fax: +41 1 383 98 10; email: secretariat@eular.org

www.annrheumdis.com
Scoliosis and Trendelenburg sign in a painting by P P Rubens

In an article on Rubens' painting “The Three Graces” Degueker suggests that hypermobility is a medical explanation of the seeming scoliosis and Trendelenburg sign in the middle figure.1 But the posture of this middle figure should probably be interpreted as an artistic phenomenon without medical reference.

Sculptors in classical Greek and Roman periods often used the contrapposto posture. In this, by putting most weight on one leg, the other leg can be shown in a relaxed and semi-flexed position. This undulating between tension and relaxation will animate the figure. A person with normal muscular function and a normal back can perfectly well pose in this way with relaxed hip abductors on the weightbearing side, a descending hip on the opposite side, and a compensating scoliotic posture. This posture is facilitated by support from the arm as in Rubens' painting. If the person wants to take a forward step, relaxation of the muscles of the weightbearing hip can no longer be maintained, and the positive Trendelenburg sign will disappear.

In the Renaissance period the use of this contrapposto posture was revived. During his stay in Rome Rubens eagerly studied the then recently excavated Laokoon sculpture with its three distorted figures.2 He often used such distorted postures in his paintings to give the impression of vigorous muscular characters capable of performing great tasks. The best example is probably “The Debarkation at Marseilles” in the María de Medici cycle from 1622 to 1625 for the Luxembourg Palace in Paris.3 Here, three young women, nereids, with curved muscular backs at the bottom of the picture nearly seem to carry the ship of María de Medici.

Maria de Medici.

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References

Author’s response

Dr Hansen’s remarks about our recent article in the *Annals* are pertinent and have to be taken as an alternative explanation for the observed functional scoliosis and positive Trendelenburg sign. I am grateful for this artistic-historical information. However, this does not exclude the possible diagnosis of benign familial hypermobility syndrome. In several other paintings by Rubens, where the three sisters (sisters) of the graces are represented, clinical signs of hypermobility can be seen. In the painting “The Judgement of Paris” (London National Gallery) a positive Trendelenburg sign and scoliosis can be seen in the two blond sisters who are now in a walking position without support. In one of them the right wrist is in 90° hyperflexion. In the painting “Sîne Cerere et Baco friget Venus” (Brussel Koninklijke Musea voor Schone Kunsten), subluxation of the left wrist is seen in the dark blond sister and hyperextension of the distal interphalangeal (DIP) joint of the fourth finger in another sister with brown hair. Hyperextension of a DIP and metacarpophalangeal finger joint and hyperflexion of a wrist joint is also seen in the brown haired sisters of the painting “The Madonna and Saints” (Antwerp, Sint-Jacobskerk).

1, as well as Sven Hansen, am fully aware that errors of diagnosis are commonly made either by seeing disease where none exists or by interpreting at face value a pathological appearance that is only the expression of an artistic convention. The observations made in P P Rubens’ painting, representing the sitters for “the graces” painting who are Rubens’ second wife Helen Froment and her younger sisters, are very suggestive of the diagnosis of benign familial hypermobility syndrome and not a purely artistic phenomenon.

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Reference

Comparison of WOMAC with SF-36 for OA of the knee or hip

Angst et al compared WOMAC with the SF-36 as tools to assess the outcome of a three to four week inpatient rehabilitation programme for people with osteoarthritis of the knee or hip. They concluded that both instruments capture improvement in pain levels, but functional improvement can be better detected by WOMAC. We have reservations about the use of SF-36 in this context.

We too provide residential musculoskeletal rehabilitation of usually three weeks’ duration and have been searching for a suitable instrument to assess quality of life at the time of discharge from our programme. We have rejected the SF-36 for the following reasons.

A large majority of the questions in the SF-36 relate to the subject’s experience over the past four weeks. The condition of most of our patients improves considerably over the three weeks of treatment. It is therefore not appropriate to ask how they have been over the previous four weeks. We note that the period of treatment in the report by Angst et al varies from three to four weeks.

It is not only the length of time which makes the use of the SF-36 inappropriate in this setting, many of the questions assume the subject is living an everyday life. For example, inquiry is made about “both work outside the home and housework”, “other activities at home”, and “normal social activities with family, friends, neighbours, or groups”.

Obviously if a person is devoting time and energy to an inpatient musculoskeletal rehabilitation programme they are in no position to be truly engaged in any of these work or social activities.

The while the outcomes of our similar residential rehabilitation programme for people with osteoarthritis are in accordance with those of Angst et al, we do not feel it is appropriate to use the SF-36 to measure improvement at discharge. It is of course quite reasonable to use it before admission and at three or six months’ follow up.

Authors’ response

In their letter commenting on our article,1 Jones and Leighton deal with two major problems which might arise in the application of the SF-36 to inpatients. We would like to stimulate discussion about this issue by our following response.

The first problem concerns the fact that many of the SF-36 items ask about subjective health status over the past four weeks at the time of administration of the questionnaire. Jones and Leighton suggest, therefore, that the results at the end of an inpatient rehabilitation (three or four weeks) reflect some kind of an average of the health status during that rehabilitation period in which most of the patients have improved considerably. We agree that this assessment is unlikely to show the maximum of improvement that may be expected at the day of discharge from the clinic or shortly thereafter. However, one can assume that the result overestimates the health status for the time periods close to the day of administration of the questionnaire (for example, at the day of discharge) owing to the fact that the response is based on the patient’s memory. The same problem, but in the opposite direction, would arise if we administered the SF-36 two or four weeks after the day of discharge. Thus we may possibly miss the maximal effect, which may last only a few days, but we do obtain an assessment of a certain time period, which is likely to be more valid and more clinically important than that of a single day. To take account of this point, we also reported results...
of the three month follow up (that is, two months after discharge) in our study in order to reflect the course of the effects and whether the different responsiveness of the SF-36 compared with the WOMAC remained consistent. In addition, we will publish further results of three-month assessments up to the two year follow up of our patients during the next year. The second issue deals with the fact that some items ask about activities of daily living and social participation which are not demanded or hardly possible to perform during a stay in the clinic. These are mainly the items contained in questions 4 (a4–a6) and five (a5–a6) comprising the role physical and role emotional scales. For this reason, we reported these two scales as part of the SF-36 for the sake of completeness, but we did not include them in the analysis of the comparison of WOMAC and the SF-36. Nevertheless, item 8, which is the bodily pain scale, is also affected by this problem. Müller et al dealt with this issue recently. The authors created a modified SF-36m, which was adapted in items 4, 5, and 8 to the situation of a clinic stay. They concluded that bodily pain and role emotional did not show significantly different effects from those obtained by the original SF-36, but that the role physical scale was slightly more reduced by the SF-36m. We used the SF-36 for three reasons. Firstly, the SF-36 assesses health status comprehensively—that is, not only pain and disease-specific scales as physical function, etc but also psychosocial dimensions and dimensions of social participation. As a result, it gives an overall assessment of the patient’s health status which is compatible with the WHO’s new ICIDH or the future ICF concept defining health. Secondly, the SF-36 can also be administered to “healthy” people and to patients with different diseases, which allows a comparison of the results with those for other patient groups and the general population. Thirdly, the SF-36 is one of the best tested, best known, and most widely used health measure all over the world.

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References

LETTERS

Is pamidronate effective for acute rheumatic pain?

Parenteral pamidronate is licensed in the United Kingdom for the management of Paget’s disease, tumour related hypercalcemia, and metastatic bone pain, where it can rapidly relieve symptoms.1 It is also widely used for the prevention and treatment of osteoporosis, although this represents unlicensed use of the drug, and there is some evidence that it can be rapidly effective for pain relief in patients with osteoporotic vertebral fractures.2,3 It has been used with some effect for the management of ankylodesmodynia,4 but the full extent of any analgesic properties of the drug has not been fully explored. These properties became apparent to us quite by chance in the three cases described here.

Case reports

Patient A

A 25 year old female nurse with known ankylosing spondylitis was admitted to hospital with worsening back and right buttock pain uncontrolled by regular opiate analgesia and a variety of potent non-steroidal anti-inflammatory drugs. Parenteral methyprednisolone was administered, followed by pamidronate 30 mg for “bone protection”. In the event, pamidronate was given but not methylprednisolone, deferred owing to unexplained pyrexia. Shortly after receiving her pamidronate, her intractable pain was so greatly improved that methylprednisolone was de-clined and she was discharged three days later. The improvement seen has been sustained for over six months. The unexpected analgesic effect of pamidronate in this case led to its use in two subsequent cases.

Patient B

A 38 year old housewife with chronic low back pain was admitted with a short history of acute back pain and a modestly raised C reactive protein (14 mg/l). Isotope bone scan showed increased uptake in the fifth lumbar intervertebral disc. Magnetic resonance imaging identified abnormal signal and right buttock pain suggestive of discitis. An infective cause was felt to be unlikely: antibiotics were not prescribed, but in view of her persistent symptoms, pamidronate 30 mg was given by intravenous infusion, with sufficient sustained improvement in her acute back pain to allow discharge two days later.

Patient C

A 33 year old male factory worker with a history of juvenile chronic arthritis since early childhood and spondyloarthropathy was admitted with generalised bone pain despite weekly oral methotrexate, phenylbutazone, and oral analgesia. Intercurrent diarrhoea was investigated but remained unexplained. Parenteral pamidronate 30 mg was given, leading to sustained improvement in his rheumatic pains.

Discussion

We believe these cases represent the first time that sustained analgesic efficacy has been attributed to a single dose of parental pamidronate in acute rheumatic pain not related to osteoporosis or neoplasia. The mechanism whereby pamidronate provides rapid onset sustained pain relief for metabolic bone disease or osteoporotic fractures is unknown. Many of the known effects of bisphosphonates on bone structure and cell populations are unlikely to be rapidly analgesic.5 However, it has been suggested that bones have complex sensory innervation, with nociception mediated by neurotransmitters including substance P, prostaglandin E2, and calcitonin gene related peptide which may be influenced by bisphosphonates.6 There is no reason to believe that such an analgesic effect would be confined to bones affected by osteoporosis or neoplasia and might well extend to bone pain due to inflammation. In the three cases described many other factors might have led to the apparent analgesic activity of parental pamidronate, including chance. However, the results suggest that the potential role of pamidronate in the control of acute rheumatic pain warrants further evaluation.

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References

Antibodies to β, glycoprotein I and cardiolipin in SSc

Systemic sclerosis (SSc) is a multisystem disease in which organ damage results from inflammation mediated by fibrosis, microvascular occlusion, and proliferation of the vascular intima. The reported prevalence of antiphospholipid antibodies (aCL) in SSc varies from 0 to 25%,7,8 and reports of clinical associations have been variable.4,9 To our knowledge, only one study has examined antibodies to β, glycoprotein I (β2GP1) in SSc and shown a correlation with pulmonary hypertension and raised mean pulmonary artery pressure.9 In our study we examined the frequency of β2GP1 and aCL in SSc and Raynaud’s phenomenon (RP).

Twenty six patients with SSc (16 diffuse, 10 limited), 23 with RP, and 21 healthy volunteers (employees at the research facility) were included in this retrospective study. Informed consent was obtained. All 16 patients with diffuse SSc and one patient with limited SSc patients met American Rheumatism Association (ARA) preliminary criteria for scleroderma.10 The remaining nine with limited SSc had at least three of the following: sclerodactyly, calcinosis, Raynaud’s phenomenon, oesophageal dysmotility, telangiectasia, or positive antinuclear antibodies. The patients with RP had no manifestations of connective tissue disease. Clinical and laboratory assessments were recorded at the initial visit.
**Table 1** Demographics and laboratory results in patients with SSc, RP, and normal controls

<table>
<thead>
<tr>
<th>Age groups</th>
<th>Scleroderma (n=26)</th>
<th>Raynaud’s phenomenon (n=23)</th>
<th>Normal controls (n=21)</th>
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<td>Men</td>
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<td>50+</td>
<td>3</td>
<td><em>p=0.005</em></td>
<td><em>p=0.005</em></td>
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</tbody>
</table>

**BUN**, blood urea nitrogen; **CK**, creatine kinase. *Comparison of age distribution versus SSc.

**Figure 1** Comparison of aβ2-GPI and aCL antibody levels in patients with SSc, RP, and normal controls. The numbers on the ordinate represent optical density values converted to SMU (standard IgM β2-GPI units). MPL (1 MPL unit = the binding of 1 µg/ml IgM aCL), or GPL (1 GPL unit = the binding of 1 µg/ml IgG aCL). The arrows indicate the cut off values for each dataset.

- **Healthy**
- **Raynaud’s**
- **Scleroderma**

**References**

Recurrence of reactive arthritis after a booster dose of tetanus toxoid

We report the case of a 24-year-old man who developed a recurrence of reactive arthritis after receiving a booster of tetanus toxoid.

Case report

A 24-year-old man presented with acute swelling of the right ankle. Two weeks before presentation, he had been given a booster tetanus toxoid vaccination. Within a few days of the injection, he felt pain and noticed swelling of the right ankle. The swelling and pain worsened, such that at presentation he was walking with a pronounced antalgic gait.

There was no preceding history of trauma, infection, or any past history of psoriasis, iritis, inflammatory bowel disease, or inflammatory back pain. There was no family history of ankylosing spondylitis.

Three years previously he had presented to another rheumatologist with acute synovitis of the right wrist, metacarpophalangeal joint of the left big toe, and tenosynovitis of the long flexor of the right middle finger. This was associated with conjunctivitis and chlamydiae urinashritis, with raised levels of C-reactive protein (CRP). His plasma viscosity was raised at 1.69 mPa.s; haemoglobin was 139 g/l, rheumatoid factor negative, and HLA-B27 positive. Plain radiographs of the left ankle, foot, and right hand showed no abnormalities. He was treated with indomethacin and an intra-articular injection of triamcinolone to the left ankle as well as minocycline for himself and his partner. The conjunctivitis settled within a few days, the urinashritis a few weeks later, but the joint pain took six months before becoming quiescent, by which time he was able to stop the indomethacin. Chlamydia IgG was negative by this time.

Physical examination at the second presentation showed swelling of the right ankle joint, with tenderness and synovial thickening. The subtaloid, mid-tarsal, and metatarsophalan-geal joint of the left big toe, and tenosynovitis of the long flexor of the right middle finger was raised.

Initally, triamcinolone was injected into the right ankle, indomethacin 50 mg three times a day was prescribed, and he was given elbow crutches to stop him weight bearing on the right leg. Two weeks later there was partial improvement. Prednisolone (20 mg a day decreasing by 5 mg weekly) and enteric coated sulfasalazine (500 mg twice daily) were added. One month later the ankle synovitis and pain had settled.

Discussion

Several strands of evidence link different vaccine-induced development of a spectrum of arthritides. Often, a close temporal relation exists, allowing an inference about the influ-

ence of a particular vaccine. On this basis, there is sufficient evidence to suggest that rechallenge with vaccine may be associated with more severe symptoms. Further evidence for the role of vaccines in arthritis comes from monitoring of adverse drug reactions, with one survey indicating a causal link between rubella vaccination and acute and chronic arthritis, especially in women.

The mechanisms underlying arthritis associated with vaccination are not yet fully understood. A cross reaction between bacte-

rial lipopolysaccharide epitopes and synovial antigen, leading to an idiotype-anti-idiotype immunological response enhanced by HLA-B27 expression, may provide one model. However, HLA-B27 expression may be a prerequisite for arthritis linked to vaccines although its presence may predict a more pro-

longed and severe course of arthritis. Vaccines may also trigger autoimmune responses by binding to critical antigen binding clefts on the major histocompatibility complex class II molecule, thereby triggering T cell proliferation. The impact of vaccination associated with vac-

ination can be severe, with prolonged and significant morbidity lasting many months. Hassan and Oldham reported Reiter’s syn-

drome with joint pains and conjunctivitis lasting many months, whereas Bracci and Zoppini additionally reported fevers and lymphadenopathy with the hepatitis B surface antigen vaccine (Engerix B). However, as with our case, appropriate treatment, includ-

ing non-steroidal anti-inflammatory drugs and intra-articular or oral steroids, can be useful in limiting the duration and degree of symptoms.

Vaccination has also been shown to cause necrotising vasculitis. Leucocytoclastic vasculitis has been induced most often, but polyar-

teritis nodosa-like and systemic vasculitides have also been reported in a few instances. In children, two other syndromes may occur after rubella vaccination (and natural infection): (a) the “arm syndrome”, in which brachial radiculoneuropathy causes arm and hand pain, and arthralgias that are worse at night; (b) “catcher’s crouch”, a lumbar radiculoneuropathy causing pain in the popliteal fossa on arising in the morning, which is exacerbated by knee extension and improves in a “catcher’s crouch” position. Both syn-

dromes occur one to two months after vaccination. Although the initial episode may last up to two months, relapses may occur for up to a year, eventually resolving completely without permanent sequelae.

Our case highlights a relationship between vaccination and arthritis and the ability of vaccine to retrigger a reactive arthritis in a susceptible person. Although the mechanisms of vaccination and arthritis are not clear, there is sufficient evidence to suggest that some vaccines may cause joint disease or adversely affect pre-existing joint problems. It would therefore be interesting to learn patients awaiting vaccination about the possible adverse effect on joint symptoms.

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The spectrum of arthritis associated with vaccination is illustrated by the induction of large joint monarthritis by combined diphthe-

ria, poliomyelitis, and tetanus toxoid vaccine. In one of these cases, synovectomy was curative until a booster vaccination five years later caused recurrence and, indeed, it has been suggested that rechallenge with vaccine may be associated with more severe symptoms. Further evidence for the role of vaccines in arthritis comes from monitoring of adverse drug reactions, with one survey indicating a causal link between rubella vaccination and acute and chronic arthritis, especially in women.

The mechanisms underlying arthritis associated with vaccination are not yet fully understood. A cross reaction between bacterial lipopolysaccharide epitopes and synovial antigen, leading to an idiotype-anti-idiotype immunological response enhanced by HLA-B27 expression, may provide one model. However, HLA-B27 expression may be a prerequisite for arthritis linked to vaccines although its presence may predict a more prolonged and severe course of arthritis. Vaccines may also trigger autoimmune responses by binding to critical antigen binding clefts on the major histocompatibility complex class II molecule, thereby triggering T cell proliferation. The impact of vaccination associated with vaccination can be severe, with prolonged and significant morbidity lasting many months. Hassan and Oldham reported Reiter’s syndrome with joint pains and conjunctivitis lasting many months, whereas Bracci and Zoppini additionally reported fevers and lymphadenopathy with the hepatitis B surface antigen vaccine (Engerix B). However, as with our case, appropriate treatment, including non-steroidal anti-inflammatory drugs and intra-articular or oral steroids, can be useful in limiting the duration and degree of symptoms.

Vaccination has also been shown to cause necrotising vasculitis. Leucocytoclastic vasculitis has been induced most often, but polyarteritis nodosa-like and systemic vasculitides have also been reported in a few instances. In children, two other syndromes may occur after rubella vaccination (and natural infection): (a) the “arm syndrome”, in which brachial radiculoneuropathy causes arm and hand pain, and arthralgias that are worse at night; (b) “catcher’s crouch”, a lumbar radiculoneuropathy causing pain in the popliteal fossa on arising in the morning, which is exacerbated by knee extension and improves in a “catcher’s crouch” position. Both syndromes occur one to two months after vaccination. Although the initial episode may last up to two months, relapses may occur for up to a year, eventually resolving completely without permanent sequelae.

Our case highlights a relationship between vaccination and arthritis and the ability of vaccine to retrigger a reactive arthritis in a susceptible person. Although the mechanisms of vaccination and arthritis are not clear, there is sufficient evidence to suggest that some vaccines may cause joint disease or adversely affect pre-existing joint problems. It would therefore be interesting to learn patients awaiting vaccination about the possible adverse effect on joint symptoms.

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Asymptomatic splenic infarction in Wegener’s granulomatosis

Wegener’s granulomatosis (WG) is a necrotising, granulomatous vasculitis that classically involves the clinicopathological triad of upper and lower respiratory tracts and the kidney. Less frequently, the disease may affect other organs as well. Serious and occasionally fatal complications within the spleen occur in many autoimmune rheumatic diseases, and prompt recognition of these complications is important. In a retrospective study of patients with WG, the spleen was commonly affected: 78–100% of patients had splenic lesions with a combination of necrosis, vasculitis, and granuloma formation. Clinically apparent splenic disease is rare, however. We wish to report briefly the case of a 47-year-old woman who presented with manifestations of classical WG and radiological evidence of splenic infarction.
Abnormalities as splenomegaly, capsular adhesions, impaired splenic function, and infarcts. Septic arthritis may occur as a result of a distal occlusion of the splenic artery or its branches, because splenic parenchymal arteries are end vessels that do not communicate with one another. There are few reports on splenic infarction on post mortem in patients with WG. Histological examination frequently shows massive or multiple areas of splenic necrosis, usually associated with extensive central arteritis, splenic trabeculitis, follicular arteriolitis and necrosis, disseminated visceral granulomata, and capsulitis. On CT, splenic infarcts classically and more commonly appear as peripheral, well-defined, wedge-shaped areas of low attenuation. However, other patterns of infarction have been recognised. These include multiple heterogeneous low attenuation lesions; regions of normal enhancement centrally with peripheral low attenuation; and large, low attenuation hypodense lesions that may have a rim of enhancing tissue peripherally. Examination with ultrasound in combination with duplex sonography of splenic blood supply permits non-invasive diagnosis of splenic infarction. The diagnosis can be confirmed by magnetic resonance imaging or CT scan, which permits assessment of the extent of splenic infarction.

Spleenic involvement in WG may be more prevalent than previously believed. Pain in the left upper quadrant and left shoulder and fever may be present after splenic infarction, but many patients remain asymptomatic. Consequently, cross sectional imaging is not often carried out and the lesion may frequently go unrecognised. Unless there are signs of imminent rupture of the spleen or bleeding, a conservative approach is justified. In the long term these patients may be more susceptible to pneumococcal infection because of the functionally asplenic condition. This possibility provides further help in the diagnosis of this rare condition in vivo.

References

Two cases of Mycobacterium avium septic arthritis

The “unusual and memorable” case reported by Ter Borg and ‘Tersmette’ serves as a useful reminder that atypical mycobacterial infections, although uncommon, need to be considered in immunocompromised patients.

We present here two case reports of patients with pre-existing rheumatic disease receiving immunosuppressive treatment, who developed septic arthritis due to Mycobacterium avium intracellulare.

Case one

A 51-year-old woman presented in 1999 with Raynaud’s phenomenon, facial telangiectasia, sclerodactyly, and a positive antinuclear antibody. She complained of exertional dyspnoea, and subsequent high resolution computed tomography of the chest disclosed a ground glass appearance, indicative of active alveolitis. A diagnosis of scleroderma with interstitial lung disease was made, and treatment with prednisolone 30 mg and azathioprine 100 mg daily was started. In August 2000, she complained of pain and stiffness in the left shoulder, and this was treated with an intra-articular steroid. Six months later, she developed a left shoulder effusion, from which developed septic arthritis due to Mycobacterium avium intracellulare.

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Case two
A 36 year old man presented in 1993 with arthritis, proximal muscle weakness, and a creatine kinase of 12,000 U/L. Muscle biopsy confirmed the diagnosis of polymyositis. Treatment with prednisolone (initially 60 mg daily) and azathioprine 150 mg was started. In 1997 he developed axillary lymphadenopathy, and subsequent biopsy showed M tuberculosis. A good clinical response was achieved with rifampicin, isoniazid, and ethambutol.

In 1998 synovitis developed in the left knee and right wrist. Both joints were aspirated and injected with corticosteroids after initial Gram stain, Ziehl-Neelsen stain, and bacterial culture were negative. Eight weeks later, M avium was cultured from fluid in the left knee, and treatment with clarithromycin, ethambutol, and rifampicin was started. Histology from a right wrist tenosynovectomy six months later demonstrated granulomas, and culture confirmed the presence of M avium. At present, the patient continues to receive treatment with prednisolone 7.5 mg daily and azathioprine 150 mg daily, together with the antituberculous therapy, but clinical evidence of septic arthritis remains.

Discussion
Infective arthritis due to M avium is rare, most commonly occurring in immunocompromised subjects, such as those receiving immunosuppressive drugs, or HIV positive patients. The most commonly affected joint is the knee. Up to 40% of patients with atypical mycobacterial septic arthritis have relapsed completely. Further therapeutical options were surgical bursectomy or, alternatively, radiation synovectomy. After having received complete information, the patient gave his consent to treatment by radiosynoviorthesis. After aspiration of 9 ml of a serous effusion of the olecranon bursa, and then, to avoid relapse, the patient continues to receive treatment with prednisolone 7.5 mg daily and azathioprine 150 mg daily, together with the antituberculous therapy, but clinical evidence of septic arthritis remains.

Successful radiosynoviorthesis of an olecranon bursitis in psoriatic arthritis
We describe the case of a 45 year old male patient who for more than 10 years had psoriasis with typical manifestations at knees and elbows. The family recalled psoriasis of the grandfather. Without any trauma or special straining, an olecranon bursitis and an arthritis of the left elbow developed in 1999 as the initial manifestation of psoriatic arthritis. Three months after developing the bursitis, the patient came to the rheumatological outpatient clinic for his first visit. The clinical findings showed a patient with good general condition (weight 86 cm, weight 93 kg), blood pressure 120/80 mm Hg, rhinemic pulse rate 68 beats/min; psoriatic skin lesions at elbows and knees; no reduction of spine mobility. The left elbow showed an olecranon bursitis with a diameter of 50 mm. The remaining musculoskeletal system was not affected.

The laboratory results were within the normal ranges, HLA-B27 was negative, anti-nuclear antibodies negative, functional tests of liver and kidney were normal.

Radiographic findings showed that sacroiliac joints and the left elbow joint were normal. Sonography showed an olecranon bursitis with a large effusion (fig 1A). Diclofenac 100 mg twice daily was given for the first two weeks but did not produce any effect. After that, the olecranon bursa was punctured aseptically, and a crystal suspension of 10 mg triamcinolone hexacetonide was injected. Two days later, the bursitis relapsed completely. Further therapeutical options were surgical bursectomy or, alternatively, radiation synovectomy. After having received complete information, the patient gave his consent to treatment by radiosynoviorthesis. After aspiration of 9 ml of a serous effusion, 55 MBq yttrium-90 was instilled into the olecranon bursa, and then, to avoid radiosynovitis, 5 mg triamcinolone was injected. Radioisotope scanning immediately after the injection and three days later showed that the radionuclide was distributed uniformly in the bursa. There were no local signs of an infection.

A physical examination three months after radiation synovectomy of the olecranon bursitis showed regular clinical findings. Arthrosonographic results had also normalised (fig 1B). Even six months later the bursitis was not reactivated. Radioisotope therapy is often used as an alternative, or in addition to, surgical synovec- tomy. Definite indications are chronic persisting synovitis, intermittent hydrods, relapsing synovitis after surgical synovectomy, rheumatic arthropathy, and activated osteoarthritis resistant to other treatments. Some studies have reported successful concomitant treatment of Baker’s cysts in the treatment of psoriatic arthritis, but radiosynoviorthesis solely for the treatment of Baker’s cysts is not usual. It is possible, however, by infusion of a radioisotope into the knee joint, but the popliteal cyst must not be punctured directly. Due notice should be taken of contraindications.

Other reports disagree about the success rates of radiosynoviorthesis in treating psoriatic arthritis compared with rheumatoid arthritis. A few years ago, only patients aged over 40 were treated with radiosynoviorthesis. Today, this treatment is used in an increasing number of younger patients. The success rate for radiosynoviorthesis of olecranon bursitis is between 50 and 80%, depending on the localisation and the amount of inflammatory activity.

Up to now, no studies of the treatment of chronic inflammatory of the bursa by radiosynoviorthesis have been reported. In our patient, neither the treatment with a non-steroidal anti-inflammatory drug (200 mg diclofenac daily) nor the local treatment with triamcinolone hexacetonide after a decompression aspiration led to improvement. An alternative to surgical bursectomy, radiosynoviorthesis with yttrium-90 was performed. The patient improved quickly and started working again the following day. The follow up examinations, after intervals of three and nine months, confirmed the continuing success.

As far as we know this is one of the first reports on radiosynoviorthesis in an isolated bursitis. This case gives cause for hope that radiosynoviorthesis represents a successful alternative treatment to operational intervention for chronic inflammation of the bursa.

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References
Multiple sclerosis in the course of systemic sclerosis

We describe the case of a young woman with longstanding systemic sclerosis (SSc), who later developed multiple sclerosis (MS), and discuss the possible explanations for this rare co-occurrence.

A 30 year old white woman was admitted to the department of neurology of our institution with 10 days' history of vertigo and diplopia. A year earlier the patient had had an episode of paraesthesiae of her right leg, which resolved spontaneously within two to three weeks. Since the age of 22, she had been under the care of the rheumatology service of our department of medicine. Recently, she had been referred to the department of neurology of our institution for the coexistence of the neurological syndrome and SSc in this patient. Firstly, MS occurring independently from SSc might account for the neurological deficits, given the laboratory findings and the patient's sex and age, and the prevalence of MS in the general population. However, it is also possible that there is an association between the two conditions, because MS, like SSc, is also believed to be autoimmune in nature, and the pathogenetic role of T cells is crucial in both processes. Furthermore, MS has been increasingly reported in association with other autoimmune diseases not primarily affecting the nervous system. If any of the above possibilities is present, the prognosis and therapeutic approach of our patient should match those of typical MS. The coexistence of SSc and MS is rare and, as far as we know, has been described in only four patients. Rapidly progressive and finally gripping MS developed in their early twenties, whereas SSc appeared later in the course of the MS in all four patients. Interestingly, unlike these cases, our patient presented in her thirties with a mild form of MS, several years after the onset of SSc.

A third possibility exists that, the neurological manifestations of this patient might have been part of her primary disease—that is, SSc. Involvement of the central nervous system (CNS) in this disease is considered uncommon, and secondary to vasculopathic damage. The fact that our patient had prolonged visual evoked potentials, suggestive of optic neuropathy, is rather in favour of MS, although this abnormality has been reported in SSc. On the other hand, a significant percentage of patients with systemic lupus erythematosus may present with neurologic disease and, some of them with oligoclonal banding in the CSF. Brain or spinal cord disease, or both, with clinical features and laboratory findings indistinguishable from MS has been reported in Sjögren’s syndrome too, although CNS involvement in this syndrome has been a matter of serious debate.

In the absence of guidelines for the management of such patients, we considered our patient as a case of classical MS, and, therefore, she was not deprived of the possible benefit of a disease modifying treatment, such as interferon β.

References

Heavy cigarette smoking and RA
(Masi AT, Aldag JC, Malamet RL.
Ann Rheum Dis 2001;60:1154.)
The authors of this letter, in a further analysis of their data, found that four heavy smokers in the control group were incorrectly included in the 168 subjects matched to the 42 pre-RA cases who had baseline negative rheumatoid factor (RF−) status. They should be correctly reassigned to the 48 matched controls for the 12 pre-RA cases who had baseline positive rheumatoid factor (RF+) status.

The correct assignments place 11 (23%) heavy smokers in the 48 controls for the 12 pre-RA RF+ cases. Those 12 cases include two (17%) heavy smokers. The 168 controls for the 42 pre-RA cases who had baseline negative rheumatoid factor (RF−) status should correctly include eight (5%) heavy smokers. Those 42 cases include 11 (26%) heavy smokers. The new correct figures are shown in bold in the table.

The correct assignments strengthen the findings in this prospective, community based study that baseline heavy cigarette smoking was an independent risk factor from baseline positive rheumatoid factor status.

Table 1 Numbers of pre-RA cases and matched controls reporting heavy cigarette smoking (CS 30+/day) at baseline by relevant categories and odds ratios (ORs) with 95% confidence intervals (95% CIs) for developing ACR+ rheumatoid arthritis

<table>
<thead>
<tr>
<th>Categories</th>
<th>Pre-RA cases</th>
<th>Respective matched controls</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>CS 30+/day (%)</td>
</tr>
<tr>
<td>Pre-RA RF+</td>
<td>12</td>
<td>2 (17)*</td>
</tr>
<tr>
<td>Pre-RA RF−</td>
<td>42</td>
<td>11 (26)</td>
</tr>
<tr>
<td>Entry and post-RA RF−</td>
<td>15</td>
<td>4 (27)</td>
</tr>
<tr>
<td>Conversion of pre-RA RF− to RF+</td>
<td>27</td>
<td>7 (26)</td>
</tr>
</tbody>
</table>

*No association of CS 30+/day with pre-RA RF+ (p=0.99).
†Conversion of RF− at baseline to RF+ after clinical onset of RA.
FORTHCOMING EVENTS

3rd International Congress on Autoimmunity
20–24 Feb 2002; Geneva, Switzerland
Contact: Professor Yehuda Shoenfeld, 3rd International Congress on Autoimmunity, PO Box 50006, Tel Aviv 61500, Israel
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22nd European Workshop for Rheumatology Research
28 Feb–3 Mar 2002; Leiden, The Netherlands
Contact: Professor F C Breedveld, Leiden University Medical Centre, Department of Rheumatology, PO Box 9600, 2300 RC Leiden, The Netherlands
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2002 International Congress on Behcet's Disease
2–6 Mar 2002; Madrid, Spain
Contact: Esperanzo Naredo, ISBD website: www.behcet.ws
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Tel: +47 776 27294
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10th International Conference on Autoimmunity
21–22 Sep 2002; Pavia, Italy
Contact: Organising secretariat: eventi S.R.L., Corso Cavour, 1820 - 27100 Pavia, Italy
Tel: 39 02 65 71 270
Email: osteoarthritis@oic.it
Website: www.oarsonline.org

10th International Congress on Antiphospholipid Antibodies
29 Sep–3 Oct 2002; Sicily, Italy
Deadline for abstracts 1 April 2002
Contact: Secretariat, 10th International Congress on Antiphospholipid Antibodies, c/o Kenes International, PO Box 50006, Tel Aviv 61500, Israel
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Fax: 972 3 5140077 or 972 3 5172484
Email: oarsi@kenes.com
Website: www.kenes.com/aps

7th International Conference on Eicosanoids and Other Bioactive Lipids in Cancer, Inflammation and Related Diseases
14–17 Oct 2002; Nashville, Tennessee, USA
Contact: Lawrence J Marnett, Biochemistry Department, Vanderbilt University, School of Medicine, Nashville TN 37232-0146, USA
Tel: (615) 343 7329
Fax: (615) 343 7534
Website: www.eicosanoids.science.aync.edu

66th American College of Rheumatology AGM
25–29 Oct 2002; New Orleans, USA
Contact: ACR, Ronald F Olejko, Director of Conferences and Meetings, 1800 Century Place, Suite 250, Atlanta, Georgia 30045–4300, USA
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Fax: +1 404 633 1870
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Website: www.rheumatology.org

Third International Meeting on Social and Economic Aspects of Osteoporosis and Osteoarthritis
7–9 November, 2002; Barcelona, Spain
Contact: Yolande Piette Communication, Boulevard Kleyer 108, 4000 Liège, Belgium
Tel: 32 4 254 12 25
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