Antiphospholipid antibodies and rheumatoid arthritis

We read with interest the letter entitled “Antiphospholipid antibodies and RA: presence of β2GPI independent aCL” by Bonnet et al published in the *Annals* in March 2001.* We believe that the letter needs additional clarification owing to inconsistencies in the terminology, methodology of antiphospholipid antibody (aPL) detection, and determination of positive values.

The use of the term “anticardioplin antibodies” was somewhat misleading. The term was introduced and abbreviated as “aCL,” a group of antibodies detected in many conditions, but the β2 glycoprotein 1 (β2GPI) dependence of the aCL was not defined, even though the authors focused on β2GPI independent aCL. It is generally agreed that the term aCL, if not stated otherwise, defines the antibodies detected by the classical aCL enzyme linked immunosorbent assay (ELISA).—that is, both β2GPI dependent and β2GPI independent antibodies.

There were some potential methodological errors in determining β2GPI independent aCL. It was shown that antibodies against β2GPI (anti-β2GPI) from patients with the antiphospholipid syndrome (APS) have the ability to bind β2GPI in complexes with cardiolipin only if the β2GPI concentration in solution is high enough. The threshold concentration of β2GPI was found to be just about 2 μg/ml, because no binding of anti-β2GPI was seen when serum samples were diluted 1:200 or more.* As the physiological concentration of β2GPI in human serum is approximately 200 μg/ml, the threshold binding concentration is reached at serum dilution of 1:1000. In the presence of a relatively high concentration of endogenous β2GPI, the statement that antibodies detected by this method are exclusively β2GPI independent is unjustified, if the sera containing high titres of anti-β2GPI might have yielded positive results by the method described in the letter.

The definition of antibody units in the letter is not clear and using Harris’s standards for β2GPI independent aCL is not appropriate. With the use of Harris’s standards,* the units should be abbreviated as GPl (for IgG) and MPL (for IgM) as previously defined.* However, Harris’s standards were designed for use in the classical aCL ELISA and were prepared by pooling serum samples from patients with APS. Therefore, they contain mainly, or predominantly, β2GPI dependent aCL. β2GPI independent aCL were not defined in those standards and they were not meant as standards for β2GPI independent assays.

The interpretation of anti-β2GPI ELISA as a method to detect β2GPI dependent aCL may not be valid in all cases. It was shown that not all anti-β2GPI binding β2GPI adsorbed on polystyrene high binding plates also recognised β2GPI associated with cardiolipin. We reported this binding pattern for anti-β2GPI in children with atopic dermatitis,* and the same was shown also for some patients with autoimmune diseases, including APS.*

The method for purification of β2GPI was not described. Because the authors focused on patients with rheumatoid arthritis (RA), it should be ensured that immunoglobulins were specifically removed from the β2GPI preparation. If this purification step was not carried out, traces of immunoglobulins in the β2GPI preparation might have yielded positive results for sera containing high titres of rheumatoid factor (RF). In fact, all sera containing IgM anti-β2GPI also had RF and the authors already suspected that this might be due to non-specific binding involving RF.

The method for determining cut off values was not explained and the number of normal human sera (NHS) included in the study as negative controls was not given. From the data presented in the letter, one may conclude that the cut off values were arbitrarily set at 20 units both for IgG and IgM isotypes of β2GPI independent aCL and for anti-β2GPI. We recently compared the sensitivity of anti-β2GPI ELISA and classical aCL ELISA. The results showed great differences between their sensitivities and therefore also between the cut off values calibrated by the same standards.* In addition, the authors did not report the proportion of NHS positive for each assay and the values of positive samples compared with patients with RA. Instead, they just referred to one study,* which is only one of the several published estimations of aPL in healthy subjects.

We would like to support our criticism by adding some data about aPL in our patients with RA. We randomly selected 53 serum samples from patients fulfilling the criteria for RA and 53 NHS as negative controls. The samples were tested for anti-β2GPI, β2GPI dependent aCL, and β2GPI independent aCL. The assays were calibrated with β2GPI dependent monoconal aCL (IgG and IgM anti-β2GPI ELISA and β2GPI independent aCL ELISA) and positive in-house standards (all IgA assays and β2GPI independent aCL ELISA). The cut off values for anti-β2GPI were set as described† by calculating the mean + 2 SD of absorbance values for NHS and the 95th centile value of 32 NHS for both β2GPI dependent and β2GPI independent aCL. For the anti-β2GPI determination, we used affinity purified β2GPI adsorbed on Costar high binding plates as previously described. The β2GPI preparation did not contain any immunoglobulins. β2GPI independent aCL were tested as described in the letter, but the sera were diluted 1:200. Serum samples were tested simultaneously for anti-β2GPI dependent aCL on the same plate by adding β2GPI in parallel duplicate wells. The final concentration of β2GPI was 10 μg/ml. This experimental design enabled direct comparison of binding to cardiolipin coated wells in the presence and absence of β2GPI. For the final determination of β2GPI dependent binding, the values obtained in wells without β2GPI were subtracted from the values measured in wells with added β2GPI. The patients’ histories were evaluated for the occurrence of arterial or venous thrombosis and recurrent fetal loss. Statistical analysis was performed with the X2 test where appropriate.

Table 1 presents the frequency of positive sera in each group (NHS, RA, RA-RF positive, and RA-RF negative). The frequency of increased anti-β2GPI, β2GPI dependent aCL, and β2GPI independent aCL was higher in patients with RA than in controls, but the difference was significant only for anti-β2GPI. There were no differences in the frequency of

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Frequency of anti-β2GPI, β2GPI dependent aCL, and β2GPI independent aCL in patients with rheumatoid arthritis (positive or negative for RF) and normal controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>IgG</td>
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<td>NOS (n=33)</td>
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<td>RA (n=33)</td>
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<td>RA-RF (n=33)</td>
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<td>RA-RF (n=17)</td>
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*β2GPI dependent monoclonal aCL (IgG and IgM anti-β2GPI ELISA and β2GPI independent aCL ELISA) and positive in-house standards (all IgA assays and β2GPI independent aCL ELISA). The cut off values for anti-β2GPI were set as described by calculating the mean + 2 SD of absorbance values for NHS and the 95th centile value of 32 NHS for both β2GPI dependent and β2GPI independent aCL. For the anti-β2GPI determination, we used affinity purified β2GPI adsorbed on Costar high binding plates as previously described. The β2GPI preparation did not contain any immunoglobulins. β2GPI independent aCL were tested as described in the letter, but the sera were diluted 1:200. Serum samples were tested simultaneously for anti-β2GPI dependent aCL on the same plate by adding β2GPI in parallel duplicate wells. The final concentration of β2GPI was 10 μg/ml. This experimental design enabled direct comparison of binding to cardiolipin coated wells in the presence and absence of β2GPI. For the final determination of β2GPI dependent binding, the values obtained in wells without β2GPI were subtracted from the values measured in wells with added β2GPI. The patients’ histories were evaluated for the occurrence of arterial or venous thrombosis and recurrent fetal loss. Statistical analysis was performed with the X2 test where appropriate.

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Providing it isn’t libellous or obscene, it will be posted within seven days. You can retrieve it by clicking on “read letters” on our homepage.

The editors will decide as before whether also to publish it in a future paper issue.

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2GPI, β2 glycoprotein I; NHS, normal human sera; RA, rheumatoid arthritis; RF, rheumatoid factor.
any type of antibodies between the RF positive and negative patients. One patient (a male, 66 years old) had a history of deep venous thrombosis and pulmonary embolism together with positive anti-β2-GP1 and β2-GP1 dependent aCL of IgA isotype. Interestingly, 3/11 RA sera which showed binding to β2-GP1 adsorbed on a high binding plate did not recognise β2-GP1 associated with cardiolipin, as already reported.17 In contrast, 3/9 RA sera binding β2-GP1 complexed with cardiolipin did not recognise β2-GP1 adsorbed on the surface of high binding plates. This phenomenon probably reflects the heterogeneous nature of anti-β2-GP1 in RA, which may differ in fine specificity for α2-antiplasmin antibody.

The sera from our patients with RA exhibited an even higher frequency of β2-GP1 independent aCL than that reported in the letter. As expected from reported data, the presence of β2-GP1 independent aCL was not associated with signs of APS in our patients. We also found that the addition of β2-GP1 (10 µg/ml) lowered the binding of β2-GP1 independent aCL by about 50%, most probably owing to the competition between β2-GP1 independent aCL and β2-GP1 for the same binding sites on cardiolipin.

In conclusion, patients with RA may have anti-β2-GP1 and β2-GP1 dependent aCL, which might be associated with the signs of APS. The importance of distinguishing β2-GP1 independent aCL has not been fully clarified. It seems that β2-GP1 independent aCL do not confer an increased risk for APS in RA.

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Authors’ reply
In response to the comments of Ambrozic et al we would like to provide some clarification to the data published earlier in the Annals.1

The term “anticardiolipin antibodies” (aCL) is classically used to designate antibodies directed against the cardiolipin antigen and detected in sera. The dependence of aCL on β2-glycoprotein 1 (β2-GP1) is assessed by an enzyme linked immunosorbent assay (ELISA) test using exogenous β2-GP1 in blocking buffer (containing fetal calf sera or bovine serum albumin (BSA)). In our previous publication the solution did not contain bovine or calf sera but only purified bovine serum albumin. So, this method was adapted to detect antibodies directed against cardiolipin antigen alone and not against the complexes of cardiolipin bound to exogenous β2-GP1. This method justified the terminology of β2-GP1 independent aCL for sera containing aCL without anti-β2-GP1 antibodies. The absence of anti-β2-GP1 antibodies was shown by another ELISA test specific for the detection of these antibodies. Both ELISAs were used to screen all sera.

The concentration of exogenous β2-GP1 contained in human serum is not significant at a 1/100 dilution (the dilution employed to screen our sera), in comparison with the 10% of calf sera added to the test as source of exogenous β2-GP1 in the assays used for the detection of β2-GP1 dependent aCL. In addition, the sera containing aCL (detected by an ELISA without addition of exogenous β2-GP1) did not react with β2-GP1 in the other ELISA test specifically designed to detect anti-β2-GP1 autoantibodies, and therefore which could detect hypothetically high titres of anti-β2-GP1 antibodies contained in these sera.

Harris’s standards were used after calibration of our positive control sera from patients with proven antiphospholipid syndrome (APS), which will contain α2-antiplasmin positive controls in every microtitration plate. We used these for the detection of aCL in our previous studies employing ELISA test without bovine or calf sera.2 The antiphospholipid antibodies, including aCL, are directed against several anti-genic targets. Among them, some epitopes are located on the cardiolipin alone. These data were described by Harris when aCL were first characterised in systemic lupus erythematosus sera reacting in a VDRD test. By radioimmunoassay, he showed that antibodies contained in these sera were directed against cardiolipin contained in liposomes as a reagent of the VDRL test.3 These reagents were constituted by lipids alone without any other cofactor such as β2-GP1. So, Harris’s standard can also be used to detect aCL directed only against phospholipid and not against the complex β2-GP1-cardiolipin. In addition, the use of Harris’s standards seems to be better adapted to the detection of polyclonal anti-phospholipid antibodies, than monomolecular human aCL used as internal controls.

The β2-GP1 used in our assay was provided by Stago laboratories (Asnières, France) and was purified from human sera. We used sodium dodecyl sulphate-polyacrylamide gel electrophoresis and western blotting to ensure that this purified protein was not contaminated.

For every antibody determination, aCL and anti-β2-GP1 autoantibodies, normal levels were established from studies of a large number of normal subjects (blood donors) as previously described.3 In this study, 50 serum samples, provided by consenting healthy donors, were tested as controls.

Cut off values were determined as the mean and two standard deviations of the arbitrary units obtained by reference to positive and negative internal standards. For every serum, we defined the corrected optical density (OD) (that is, the mean OD obtained in three coated wells minus the OD corresponding to non-specific binding of each serum, obtained in three uncoated wells). The cut off values defined for anti-β2-GP1 and anti-cardiolipin ELISA were 20 units in both tests. The standards for the anti-β2-GP1 test were provided to positive controls from patients with APS and were used according to previous studies.4 In contrast with the report of Ambrozic et al, we did not find raised levels of aCL or anti-β2-GP1 antibodies in normal subjects. The percentage of positive normal serum samples was <3%. These differences between our results and those of Ambrozic et al are probably associated with a differing sensitivity and specificity of the methods between the two laboratories.

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Methotrexate and postoperative complications
Grennan et al report the safety of continued methotrexate in the perioperative period.5 Previous investigators have despaired of answering this question definitively owing to the difficulty in recruiting subjects.6 It is reassuring to see that methotrexate use throughout the postoperative period does not interfere with wound healing or increase the incidence of postoperative complications.5 Despite this important finding, we believe that the results of this study should be regarded with some reservation: continuation of methotrexate throughout the perioperative period was not accompanied by significant mortality or morbidity. The elderly and those with renal impairment are at increased risk of methotrexate related pancycopenia.7,8 Indeed, in a community based, observational study of methotrexate use in 460 patients we found the
perioperative period to be especially hazardous for patients with renal impairment and sepsis. Two subjects developed pancytopenia under these conditions, one of whom died.

Although all consecutive patients were included in the study by Grennan et al, it is unclear whether Wrightington Hospital is a tertiary referral centre. Renal impairment is an important comorbidity, although no comment is made about the prevalence of this in the study group. It is important to note that this is a study of methotrexate use in elective surgery.

We suggest caution should be taken in patients with renal impairment (best assessed by creatinine clearance) and in the elderly with comorbid cardiovascular disease when approaching surgery. Sudden volume loss, bleeding, or dehydration will impair methotrexate excretion and increase the risk of bone marrow toxicity in this group. It may be prudent in those assessed as at high risk of this complication to stop methotrexate one week before the operation and restart treatment one or two weeks after the operation, depending on postoperative progress. This time period without methotrexate treatment will not affect disease control in the vast majority of patients, although after four weeks without treatment, most will have a flare of the disease.

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References

Authors’ reply
Dr Wluka draws attention to the potential hazard of methotrexate prescribing in sub-

jects with chronic renal failure and sepsis, and we would not disagree with this point. The risk of surgery is increased by any coincidenta-
tial medical disease including renal failure and sepsis as well as chronic vascular disease. We noted this in our study.

The role of the doctor/rheumatologist is to ensure that any such chronic medical problems are under optimal control before elective orthopaedic surgery. Methotrexate treatment should not be withdrawn from patients with rheumatoid arthritis if the disease is well con-
trolled before elective surgery. The comments of Dr Wluka do not invalidate this conclusion.

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LETTERS

Proximal myopathy and bone pain as the presenting features of coeliac disease

It is rare for coeliac disease to present only with symptoms of osteomalacia, without the classic symptoms of diarrhoea, steatorrhoea, and abdominal discomfort.1

A 22 year old woman presented with 18 months of a waddled gait disturbance. Hip and back x rays were normal. She experienced bone pain when being hugged, when laugh-
ing, or coughing, and had difficulty standing up from a low chair and holding her arms up to blow-dry her hair. She had extreme tiredness and thought she might have lost some weight, but there were no gastro-

intestinal symptoms. On examination, she was pale and had dif-
ficulty squatting and holding her arms above her head.

Investigations showed a mild anaemia sec-
ondary to β thalassaemia minor and iron deficiency. Other investigations disclosed a raised alkaline phosphatase of 1375 U/l (nor-
mal 30–120 U/l), reduced red blood cell folate level of 290 nmol/l (>300 nmol/l), corrected calcium of 1.75 mmol/l (2.15–2.65 mmol/l), phosphate 1.0 mmol/l (0.8–1.4 mmol/l), 25-
hydroxy vitamin D <5 nmol/l (15–110 nmol/l), and raised parathyroid hormone 53.1 nmol/l (1.0–6.5 nmol/l).

Investigations were carried out for a malab-
sorption syndrome. Anti-tigliadin, antiendomy-
sial, and antiglutaminase antibodies were strongly positive, and a small bowel biopsy showed almost total villous atrophy, confirm-
ing the diagnosis of coeliac disease.

A bone scan demonstrated increased activity
throughout the skeleton, consistent with secondary hyperparathyroidism. Osteoporosis was demonstrated by dual emission x ray absorptiometry estimation of bone mineral density, with the lumbar spine measuring 0.882 g/cm² (2.65 SD below the young adult female mean) and the neck of the femur 0.633 g/cm² (2.9 SD below the mean).

Treatment involved a gluten free diet, ergo-
calcirol 3000 IU daily, calcium carbonate 600 mg twice a day, slow release ferrous sulphate 350 mg daily, and folate 5 mg daily.

Within two months her bone pain and tiredness resolved and her strength had returned to normal. Calcium was within the normal range, and alkaline phosphatase re-
duced to 374 U/l. Bone mineral density had increased markedly after 12 months of treat-
ment, with the lumbar spine increasing by 37% to 1.204 g/cm² (mean level for young adult women), and the neck of the femur by 39% to 0.878 g/cm² (0.8 SD below the mean). She had also gained more than 7 kg in weight, and repeat gastroscopy and duodenal biopsy were normal.

Osteomalacia is now an uncommon dis-
case, and even more uncommon is the presenting symptom of coeliac disease. Since its first description in 1965,1 there have been several more case reports of coeliac disease presenting with bone pain, proximal myop-
athy, radiographic findings of pseudofractures and Looser’s zones, or secondary hyperpara-
thyroidism evident on bone scan.2 Most patients were middle aged and responded within six months to treatment with a gluten-free diet, supplemental calcium, and vitamin D, and in some cases with the addition of bisphosphonates.2 A recent case finding study of coeliac disease showed that many patients in fact present with non-
gastrointestinal symptoms, of which anaemia is the most common.3

Hypocalcaemia in coeliac disease is caused by reduced gut absorption of calcium as a consequence of reduced levels of the fat solu-
ble vitamin D. It is also due to reduced absorptive surface area secondary to villous atrophy, and calcium lost in the stools by binding to unabsorbed dietary fatty acids to form insoluble calcium soaps.4

Secondary hyperparathyroidism can de-
velop if it did in this case. The increase in bone turnover. Low bone mineral density is probably due to a combination of hypocalca-
emia, impaired bone mineralisation, and re-
duced exercise because of skeletal pain and proximal weakness.1

Early diagnosis of coeliac disease is impor-
tant because untreated patients have an increased risk of gastrointestinal lymphomas. Useful screening blood tests include determina-
tion of antigliadin and antienthymiosial antibodies. They have a high sensitivity and specificity, with a negative predictive value of around 95%.4 There is a genetic influence on the susceptibility to coeliac disease, with a 10% prevalence rate among first degree relatives. On screening our patient’s relatives, one of two siblings was also found to have coeliac disease. A strong association has been found with HLA-DR3 and DR5/DR7.5

Treatment with a gluten-free diet with sub-
sequent villous restitution on repeat biopsy has been associated with rapid gains and even normalisation of bone biomarkers. The greater the degree of osteopenia, the more rapid the gain.1 The change is due to improvement of calcium and vitamin D status, leading to remineralisation of the large volume of unmineralised osteoid matrix.6

Introduction of hormone replacement therapy in women approaching the meno-
pause, and bisphosphonates in patients with osteoporotic fractures, should also be considered.7

Osteomalacia presenting with muscle weakness and aches may be the only present-
ing features of coeliac disease. Prompt treat-
ment and diagnosis is important because treatment with a gluten-free diet and hormone replacement therapy including vitamin D may lead to rapid and effective recovery.4

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Plasma and peripheral blood
mononuclear cells levels of Zn and
Cu among Indian patients
with RA

Plasma and serum levels of zinc (Zn) and copper (Cu) have been reported to be altered in patients with rheumatoid arthritis (RA).1,2 Few studies have measured these levels in tissues, particularly peripheral blood
mononuclear cells (PBMCs), the site for a host of inflammatory responses.3 In a previous study we measured levels of Zn and Cu in plasma and PBMCs to see if they correlated with disease activity and reported reduced levels of Zn in the serum of patients with active RA.4 Patients attending the rheumatology clinic at our institute and satisfying the American College of Rheumatology (formerly American Rheumatism Association) criteria for the diagnosis of RA were studied.5 Patients were categorised as either active or inactive RA. All patients classified as active RA had at least three of the following: morning stiffness for more than 45 minutes, five swollen joints, five tender joints, and erythrocyte sedimentation rate (Westergren) more than 45 mm/hr.6 Both plasma and lysed PBMC samples were read on atomic absorption spectrophotometer (Perkin Elmer, Norwalk, CT) at a wavelength of 213.8 nm for Zn and 324.7 nm for Cu. The atomic absorption spectrophotometer was calibrated with reference standards obtained from Sigma Chemicals Company (St Louis, MA).

Thirty nine patients (31 women) with RA had a mean (SD) age of 36.2 (8.3) years (range 18–52) and mean disease duration of 55.8 (36.6) months (range 6–168). Twenty patients had inactive and 19 patients active disease, respectively. Twenty two healthy controls (14 women), well matched for age (mean age 34.2 (6.2) years, range 20–56) with the two patient groups, were studied at the same time. Both patients and controls were of middle socioeconomic status. Table 1 shows the plasma and PBMC levels of Zn and Cu.

Our results are in agreement with earlier studies which showed that plasma Zn levels are significantly lower and plasma Cu levels significantly higher in patients with active RA.4,7 Additionally, it is shown here that PBMC levels of these elements have an inverse relation with plasma levels.

With acute inflammation, the acute phase reaction may move Zn into the liver and the reduced plasma concentration may not be indicative of overall deficiency.8 Possibly, also, PBMCs may be an additional site to which Zn and Cu move during inflammatory states. The average disease duration of patients with active disease was more than 54 months. In such a long process it is unclear whether the finding of raised Cu levels in the plasma is to be expected because of a concomitant rise in caeruloplasmin, which is an acute phase reactant.9 The reduced levels in PBMCs may signify a movement of Cu from PBMCs to the liver where it is absorbed and stored. The findings of a study in plasma and PBMC Cu levels may merely be a reflection of an acute phase response, and the alterations may be due to increased hepatic synthesis of copper.10 The effect of concomitant drugs also needs to be considered. The number of patients receiving non-steroidal anti-inflammatory and second line drugs was similar. None of the patients received corticosteroids in the preceding eight weeks.

It would be premature to speculate about a possible role for supplementation with Zn and Cu for patients with RA. From the results shown in this study, patients with inactive RA had similar levels of Zn and Cu as controls. If the diet of patients with active RA were deficient in Zn (as shown by plasma levels) it would be unlikely to contain an excess of Cu and vice versa for PBMC levels. The more plausible explanation would be that this represents a redistribution of trace elements between plasma and PBMCs, and a control of inflammation would return Zn and Cu levels to those seen in controls. Hence, further studies need to be carried out on paired samples in a cohort of patients, once when the disease is active and again when it becomes inactive. If plasma Zn levels decrease with the control of inflammation and attain the levels of controls then there would be no indication for dietary supplementation with these metals.

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Essential cryoglobulinaemia (type 1) in three patients characterised by Raynaud’s phenomenon, arthralgia-arthritis, and skin lesions

The relevance of monoclonal gammapathy in relation to rheumatic disorders has recently been reviewed. Monoclonal gammapathy or

| Table 1 | Copper and zinc levels in plasma and PBMCs of patients with RA. Results are given as mean (SD) |
|-----------------|-----------------|-----------------|-----------------|
|                | Active RA       | Inactive RA     | Overall RA      | Controls        |
| Plasma zinc (µg/l)† | 638 ± 467       | 982 ± 264       | 824 ± 386       | 1024 ± 428      |
| PBMC zinc (µg/10⁶ cells)† | 135 ± 28.6      | 108 ± 38.4      | 121 ± 34.4      | 98 ± 16.4       |
| Plasma copper (µg/l)‡ | 164 ± 357       | 1016 ± 296      | 1426 ± 324      | 946 ± 466       |
| PBMC copper (µg/10⁶ cells)‡ | 58 ± 43.2       | 86.4 ± 83.2     | 74.3 ± 38.2     | 104.2 ± 85.8    |

PBMCs, peripheral blood mononuclear cells; there was no correlation between age, duration of disease, rheumatoid factor positivity, or any second line drug with plasma or PBMC levels of Zn and Cu.

*Overall levels were significantly lower among patients than controls (p<0.05) and patients with active RA had lower levels than those with inactive RA (p<0.05). Tovarall levels were significantly higher among patients than controls (p<0.05) and patients with active RA as compared with those with inactive RA (p<0.05). There was overall a negative correlation between plasma and PBMC zinc levels (p<0.05). Tovarall, patients with RA had higher levels than controls (p<0.01) and those with active RA had higher levels than those with inactive disease (p<0.01). Tovarall, patients with RA had lower levels than controls (p>0.05) and those with active RA as compared with those with inactive disease (p<0.01). There was a negative correlation between plasma and PBMC copper levels (p<0.05).

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paraproteins can be detected in healthy adults and in different disease entities like amyloidosis, malignant proliferative disorders,\(^1\) associated with hepatitis C infections,\(^2\) and rheumatic diseases.\(^3\) The overall incidence of paraproteins in adults is about 1% . This incidence is higher in people over 70 and increases with age.\(^4\) When a paraprotein is detected and no underlying disease is present, the condition is referred to as a monoclonal gammapathy of undetermined significance.

Owing to their immunological properties, paraproteins can be precipitated by lowering the temperature below 37°C. In this way they form an essential part of the so-called cryoglobulins. When cryoglobulins are detected in the serum of a patient, this finding is usually associated with the coexistence of paraproteins. Recently, three patients with a clinical picture of a necrotising vasculitis associated with an essential cryoglobulinaemia (type 1) were admitted to our department. The causative relationship between the cryoglobulinaemia and the clinical symptoms was suggested by the reduced severity of the clinical signs when paraprotein levels were decreased.

Case reports

**Patient A** was a 69 year old man who, in May 1999, developed extremely painful purpura of the upper part of the right leg. In the following days the upper part of his finger became necrotic. Angiography of his hand showed normal vessels. Immune complexes found in the serum of a patient, this finding is usually associated with the coexistence of paraproteins. Recently, three patients with a clinical picture of a necrotising vasculitis associated with an essential cryoglobulinaemia (type 1) were admitted to our department. The causative relationship between the cryoglobulinaemia and the clinical symptoms was suggested by the reduced severity of the clinical signs when paraprotein levels were decreased.

Case reports

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as CV with severe neurological involvement; and the difficulty of making a timely diagnosis of IE by routine investigations. In both cases, the clinically prevalent CV symptoms together with their transient favourable response to corticosteroids (case 2), further delayed the detection of IE responsible for the fatal outcome. Previous reports (Medline) show that the association of IE with "asymmetric" cryoglobulinemia is not uncommon, but only a few studies report IE clinically presenting as CV. This latter presentation can mean a misdiagnosis; moreover, steroid treatment can contribute to masking and worsening of the underlying infectious disorder.

In our patients we can reasonably exclude the possibility that IE represented a complication of the CV. In over 300 of our patients with CV, bacterial manifestations have rarely been seen, even in subjects undergoing steroid or CV, bacterial manifestations have rarely been seen, even in subjects undergoing steroid or CV treatment, were sufficient reasonably to exclude a suspicion of IE presenting as CV. In conclusion, CV may represent the presenting manifestation of IE, a life threatening condition for which a timely correct diagnosis and adequate treatment are essential. In patients with CV unrelated to HCV infection and with fever unresponsive to steroids it is strongly recommended that other less common, infectious factors are excluded. IE, for example, should be excluded by repeated blood cultures and careful clinicomicrobiological evaluation, including transoesophageal echocardiography at the onset, were sufficient reasonably to exclude a suspicion of IE presenting as CV. In conclusion, CV may represent the presenting manifestation of IE, a life threatening condition for which a timely correct diagnosis and adequate treatment are essential. In patients with CV unrelated to HCV infection and with fever unresponsive to steroids it is strongly recommended that other less common, infectious factors are excluded. IE, for example, should be excluded by repeated blood cultures and careful clinicomicrobiological evaluation, including transoesophageal echocardiography at the onset, were sufficient reasonably to exclude a suspicion of IE presenting as CV.

### Table 1: Epidemiological, clinical, and seroimmunological features in two female patients with infective (bacterial) endocarditis, at the first visit

<table>
<thead>
<tr>
<th>Patient</th>
<th>Age (years)</th>
<th>Disease duration (weeks)</th>
<th>Purpura</th>
<th>Weakness</th>
<th>Arthritis</th>
<th>Hepatopathy</th>
<th>Nephropathy</th>
<th>Neutrophil involvement</th>
<th>Cardiac symptoms</th>
<th>ESR (mm/1st h)</th>
<th>CRP (normal &lt;5 mg/l)</th>
<th>WBC (normal 5–10 × 10⁹/l)</th>
<th>γ-Globulinaemia (g/l)</th>
<th>Lymphocytes (%)</th>
<th>Neutrophils (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient 1</td>
<td>63</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td>Absent</td>
<td>Absent</td>
<td>Peripheral</td>
<td>Absent</td>
<td>83</td>
<td>93</td>
<td>9000</td>
<td>19.5</td>
<td>10</td>
<td>87</td>
</tr>
<tr>
<td>Patient 2</td>
<td>75</td>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td>Absent</td>
<td>Absent</td>
<td>Peripheral</td>
<td>Absent</td>
<td>77</td>
<td>81</td>
<td>83,600</td>
<td>19.5</td>
<td>9</td>
<td>81</td>
</tr>
</tbody>
</table>

*HBsAg, anti-HBs, anti-HBc IgM, anti-Hbc; anti-HCV by ELISA and RIBA; anti-EBV IgM, anti-HIV.

**References**


**ANCA antibodies in Graves’ disease**

Several drugs have been associated with antineutrophil cytoplasmatic antibodies (ANCA) positivity—namely, hydralazine, penicillamine, allopurinol, and propylthiouracil. Although propylthiouracil is often implicated in the induction of ANCA positive vasculitis, other antithyroid drugs, such as carbimazole and thiamazole, have been linked. Furthermore, ANCA positivity has been described in the course of Graves’ disease without vasculitis.

This study aimed at determining the frequency and specificity of ANCA in a series of patients with Graves’ disease. We retrospectively examined 35 serum samples from patients with Graves’ disease. Diagnosis of the disease was based on typical signs and symptoms of hyperthyroidism, raised serum triiodothyronine and thyroxine, very low or undetectable thyroid stimulating hormone, and increased thyroid radioactive iodine uptake. All patients had been receiving treatment with carbimazole (30–45 mg) for at least two months. None of the patients were treated with propylthiouracil or any drug affecting the immune function. ANCA antibodies were determined by indirect immunofluorescence (IF) on ethanol fixed granulocytes, as described elsewhere. Staining patterns were described as cANCA, when a diffuse granular cytoplasmatic staining with central accentuation was seen, as pANCA, when a perinuclear pattern was observed, and as XANCA when a distinct, homogeneous, non-granular cytoplasmatic staining pattern was seen. Autoantibodies against proteinase 3 and myeloperoxidase (MPO) were detected by enzyme linked immunosorbent assay (ELISA; Orgentec) as described elsewhere. Hospital Universitari Germans Trias i Pujol is a 533 bed hospital situated on the outskirts of Barcelona. It is a referral hospital serving a population of 700 000 inhabitants. The immunology laboratory is a reference centre.

ANCA (IF) were detected in 21 (60%) of the serum samples. The titre ranged from 1/40 to 1/2560. The immunofluorescence staining pattern was as follows: nine (26%) pANCA, seven (20%) XANCA, and five (14%) cANCA. ELISA was positive in just one case (for MPO)—in the patient with an IIF titre of 1/2560. Our results are very similar to those of Aeltra et al, who reported ANCA positivity by IIF in 6/21 (29%) patients with Graves’ disease. The IIF staining pattern was ANCA in five cases and XANCA in one case. Anti-MPO antibodies were detected only in one (5%) of the patients. In our study ANCA were detected in 21 (60%) serum samples. The IIF staining patterns were more heterogeneous, but the ELISA results were similar.
Lupus relapse after prostaglandin E administration: activation of a cytokine cascade?

A variety of abnormalities in cytokine production occur in human and murine lupus, but their specific role in lupus pathogenesis is unknown. Recently, in vitro studies emphasized the role of prostaglandins in the cytokine induction and modulation of the humoral immune response. We present a patient with systemic lupus erythematosus (SLE) who had a relapse after prostaglandin E (PGE) administration, which to our knowledge has not been previously reported. A 25-year-old woman was admitted to hospital to receive treatment with IV PGE, owing to severe Raynaud's phenomenon. Fifteen years previously SLE had been diagnosed according to American Rheumatism Association criteria, with renal biopsy proven diffuse proliferative lupus glomerulonephritis (WHO class IV). A physical examination showed only painful, violaceous, and atrophic finger pads with no signs of systemic inflammatory disease. The chest x-ray films were normal and laboratory investigations showed antinuclear antibodies (ANA) (titre 1/160) and hypercomplementaemia (C3 0.6 g/l, C4 0.1 g/l), with normal liver, renal, and haematological parameters. Treatment with 40 mg/12 h IV PGE was started. On the sixth day of treatment the patient began to have chest pain, fever, dyspnoea, and pericardial friction rub. The laboratory showed anaemia, modest thrombocytopenia, and ANA 1/320, with no changes in the rest of the biochemical serum parameters. Echocardiography and chest x-ray examination showed moderate pericardial and bilateral pleural effusions. PGE, was withdrawn and cyclophosphamide, 60 mg/day, was started with prompt improvement in the symptoms.

We investigated the possibility that PGE-mediated cytokine production might be the cause of the relapse. In vitro in this patient, may be a marker of Th2 cytokines to levels similar to those seen in healthy mice results in amelioration of the clinical manifestations of an already established experimental SLE. On the other hand, in some studies it has been suggested that PGE, alters the Th1/Th2 balance of T cells to a dominant Th2 response. We suggest that the rise in IL4 production induced by the PGE, as shown in vitro in this patient, may be a marker of dysregulation of the Th1/Th2 profile and might have been the cause of her lupus relapse.

Table 1

<table>
<thead>
<tr>
<th>IL2</th>
<th>INFγ</th>
<th>IL4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basal PGE</td>
<td>Basal PGE</td>
<td>Basal PGE</td>
</tr>
<tr>
<td>Control Patient</td>
<td>1.2</td>
<td>1.0</td>
</tr>
<tr>
<td>0.8</td>
<td>1.0</td>
<td>0.6</td>
</tr>
<tr>
<td>1.8</td>
<td>1.2</td>
<td></td>
</tr>
<tr>
<td>0.6</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>10.8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

IL2, interleukin; INFγ, interferon γ.

Whole blood was incubated with or without PGE, 10 ng/ml, for six hours in the presence of Brefeldin A. Cells were stained with FITC-anti-CD3 and, after erythrocyte lysis and permeabilisation, with the phycoerythrin-conjugated anti-cytokines. Samples were analysed by flow cytometry.
Osteocalcin: a marker of disease activity in ankylosing spondylitis?

In rheumatic diseases the synovial concentration of osteocalcin, which represents osteoblast activity, is inversely correlated with the extent of joint inflammation. Synovial and serum osteocalcin correlate positively. In ankylosing spondylitis (AS) the serum concentration of osteocalcin has been reported to be low or normal. Cross sectional studies have shown no significant correlation between osteocalcin serum concentration and erythrocyte sedimentation rate (ESR) or C reactive protein.

To answer the question whether serum osteocalcin is a useful marker of disease activity in AS, longitudinal studies may be more sensitive and specific. For this reason changes in osteocalcin were correlated with changes in ESR, which is probably still the best marker of inflammation in AS.

In 89 patients with ankylosing spondylitis (modified New York criteria; 75 male, 14 female; mean age (11) years; disease duration 15 (9) years) venous blood was taken at the start and the end of a three week rehabilitation course consisting of physical exercise, physiotherapy, hydrotherapy, electrotherapy, underwater exercises, and raif therapy as prescribed by the patient's doctor. Patients were advised not to change their drug treatment. The ESR was determined according to the standard method. The result at one hour being used for calculation. Serum was frozen at −18°C until further analysis. Osteocalcin was measured in one batch with a commercially available test kit (IRMA, Bioctis, Vienna; normal range according to the manufacturer 7.5–31.5 ng/ml in men, 3.7–31.7 ng/ml in women). Results are given as median (25th, 75th centile). The Mann-Whitney rank sum test and Spearman rank order correlation test were used to test significance.

Values at the first measurement were ESR 18 (8, 28) mm/1st h, serum osteocalcin 25 (20.5, 52.8) ng/ml. The osteocalcin serum concentration was within the normal range in 66 of the 89 patients, and 23 patients had increased serum concentrations. Values at the end of treatment were ESR 16 (8, 26.5) mm/1st h, osteocalcin 26.1 (18.9, 32.7) ng/ml (no significant changes). The ESR and osteocalcin at the first examination did not correlate significantly (r=0.07; p=0.5). The changes in ESR (1 (−4, 6) mm/1st h) and in osteocalcin (−0.5 (−2.6, 5.7) ng/ml) showed a significant correlation (r=−0.28; p<0.01).

The results confirm previous findings showing no significant correlation between serum osteocalcin and ESR in cross sectional studies. Changes in osteocalcin after three weeks, however, correlated significantly with changes in ESR, but in view of the weak correlation (r=−0.28) the clinical relevance of serum osteocalcin determination for assessing disease activity seems limited.

Table 1: Immunological data of the patient

<table>
<thead>
<tr>
<th>Values</th>
<th>Patient</th>
<th>Normal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lymphocyte count [×10^9/l]</td>
<td>1.5</td>
<td>&gt;2</td>
</tr>
<tr>
<td>IgG [g/l]</td>
<td>23.3</td>
<td>(8–19.4)</td>
</tr>
<tr>
<td>IgA [mg/l]</td>
<td>6290</td>
<td>(620–3980)</td>
</tr>
<tr>
<td>IgM [mg/l]</td>
<td>531</td>
<td>(240–3920)</td>
</tr>
<tr>
<td>CD3 [×10^9/l]</td>
<td>1.2</td>
<td>0.7–4.2</td>
</tr>
<tr>
<td>CD4 [×10^9/l]</td>
<td>2.0</td>
<td>0.3–2.0</td>
</tr>
<tr>
<td>CD8 [×10^9/l]</td>
<td>1.0</td>
<td>0.3–1.8</td>
</tr>
<tr>
<td>CD19 [×10^9/l]</td>
<td>0.3</td>
<td>1.2–3.6</td>
</tr>
<tr>
<td>CD3/CD16+CD56 [×10^9/l]</td>
<td>0.2</td>
<td>1.0–1.9</td>
</tr>
</tbody>
</table>
CD4+ lymphopenia may cause dysgammaglobulinemia and autoimmunity syndromes such as Takayasu arteritis.

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References

Recurrent orbital pain and diplopia in a 12 year old boy

A previously healthy 12 year old boy was referred to our unit in May 2000, with a history of persistent ocular pain and recurrent diplopa. The first disease manifestation had started three years before, when the patient suddenly presented with diplopia and painful periorbital and eyelid oedema. Limited abduction of the right eye was present. The treating ophthalmologist, after a thorough investigation that excluded brain tumours, orbital masses, and myasthenia gravis, prescribed naproxen (20 mg/kg/day) and systemic corticosteroid treatment (prednisone 1 mg/kg/day, tapered and withdrawn after 15 days); symptoms recovered completely in two weeks. A first magnetic resonance imaging (MRI) scan of the orbit had shown first degree exophthalmus of the right eye and oedema and thickening of the right rectus lateralis muscle (fig 1). Since then the boy had many episodes of ocular pain and diplopia, lasting from two to four weeks, affecting both eyes or alternatively the right and the left, at intervals of up to three months. No sequelae were detected after each relapse.

During the last relapse in October 1999, naproxen and high dose oral corticosteroid treatment (prednisone 2 mg/kg/day) were required to control the disease activity, which subsided over a period of two months. After a short period of wellbeing, the disease flared up again, and recurrence of orbital pain and diplopia was observed when steroids were reduced to 0.5 mg/kg/day. The boy was then admitted to our unit. He appeared well, with no constitutional symptoms. Ocular examination showed mild right exophthalmus and limited motion of both eyes.

Laboratory tests including muscle enzymes (alanine aminotransferase, aspartate aminotransferase, creatine kinase, lactate dehydrogenase, aldolase) values, complement levels, and thyroid function were all within the normal range. Serological tests were negative for viral and bacterial infections, and antibodies against Borrelia burgdorferi were absent. Autoantibodies (antinuclear antibodies, anti-dsDNA, anticyclic, antinuclear and antiphospholipid antibodies) were undetectable. Other markers that are considered measures of disease activity in juvenile inflammatory myopathies were evaluated: factor VIII related antigen levels were raised, while neutrophin levels and the number of circulating B lymphocytes (CD19 positive cells) were normal. Electrocardiography and two dimensional echocardiography excluded a concurrent myocarditis. On the basis of clinical manifestations and immunological parameters systemic lupus erythematosus (SLE), scleroderma (Scl), Crohn’s disease, and thyroiditis were excluded. Orbital MRI showed significant oedema and thickening of the left extraocular and of the right medial rectus muscles. Electromyography showed increased insertional activity, fibrillations, and positive sharp waves. Ocular myositis was diagnosed. The oral prednisone dose was raised to 30 mg/day, and rapidly tapered after improvement of signs and symptoms. In November 2000, cyclosporin (3 mg/kg/day) was introduced; no relapse of the ocular findings has been seen so far, and prednisone has been progressively reduced to the current dose of 5 mg/day.

The group of idiopathic inflammatory myopathies encompasses a variety of common and uncommon syndromes. The uncommon variants of myositis include orbital myositis, a condition that is rare in adults and even rarer in children.2,3 Orbital muscle inflammation may be seen in association with other autoimmune diseases, such as SLE, Scl, giant cell myocarditis, and Crohn’s disease. Primary conditions that it is important to distinguish from orbital myositis include thyroid eye disease, ocular myopathies, such as mitochondrial disorders and ocular dystrophies; and orbital pseudotumours. Cellulitis, neoplasms, arteriovenous malformations, and cavernous sinus thrombosis are also included in the differential diagnosis.

Orbital myositis implies orbital inflammation confined to one or more of the extraocular muscles, and inflammatory reactions involving the four extraocular muscles and the extraocular nerve sheaths. These muscles are usually involved in an acute, inflammatory, non-suppurative reaction. Orbital myositis is characterized by the involvement of the extraocular muscles, and orbital pseudotumours. Cellulitis, neoplasms, arteriovenous malformations, and cavernous sinus thrombosis are also included in the differential diagnosis.

Figure 1 Orbital MRI (T weighted image with contrast) that shows increased signal intensity in the right rectus lateralis muscle.
muscles. MRI shows muscle oedema of the affected muscle(s), and is useful for monitoring disease activity. Non-steroidal anti-inflammatory drugs are recommended as first line treatment, but systemic steroids are required in most cases. When steroids fail to control muscle inflammation, methotrexate and cyclosporin have been used with success.1 In our patient, cyclosporin was successful as a steroid sparing agent, because a rapid recurrence of symptoms had always occurred in the past when the corticosteroid dose was reduced, and at present, after six months of cyclosporin treatment, the boy is still asymptomatic and receiving a low dose of steroids.

Despite the rarity of this disorder, our case suggests that diplopia in a child requires rapid and extensive investigation that must include isolated oculomotor palsies in the differential diagnosis.

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References


Sciatica or spinal lymphoma

The involvement of the central nervous system and vertebrae by low grade non-Hodgkin’s lymphoma is rare.1 In a previous “lesson of the month” in this journal, it was implied that there is always a bad prognosis for patients with spinal lymphoma; however, milder cases may also occur.

A 71 year old man presented to us in January 2000 with a three month history of severe low back pain affecting mainly the left lumbar area and buttock, radiating to the outer aspect of the left thigh and calf. He did not have bladder symptoms or history of recent falls. On examination, he looked well; there was no lymphadenopathy. He had restricted back movement with tenderness of lower lumbar spinal processes. Straight leg raising test was restricted to 45° bilaterally, and produced inflamed muscles. MRI shows muscle oedema of the lower lumbar spine and lumbosacral junction, which was compatible with osteoporosis and degenerative changes.

An MRI scan showed extensive infiltration involving vertebral bodies and appendages throughout the lumbosacral spine, being most intense at the biconcave L5; the appearance was consistent with lymphoma or myeloma (fig 1).

During his stay in hospital, the patient’s pain resolved completely after treatment with non-steroidal anti-inflammatory drugs, analgesics, and physiotherapy. His haematologist started treatment of the patient with chlorambucil 10 mg/day for 10 days to be repeated every three weeks, these cycles to be continued for 12 months.

Eight months after the diagnosis of spinal lymphoma, the patient has remained well and active; his back pain is minimal.

In rheumatology, it is essential to differentiate between malignant disease and the more common causes of back pain. Our patient was in a good physical condition, which is unusual for someone with malignancy, his presentation with low back pain appeared to be a typical case of sciatica, and the pain settled down with conventional treatment. Clinically there was no evidence of recurrence of lymphoma—for example, enlarged lymph nodes, weight loss, or fever. However, because of his age at presentation and significant past history thorough investigations were mandatory.

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References


Unusual complications in the Churg-Strauss syndrome

Although abdominal complications are occasionally reported in the Churg-Strauss syndrome (CSS), bowel perforations, cholecystitis, eosinophilic peritonitis, and oophoritis are very unusual2 and normally resolve after immunosuppressive treatment. We report the case of a patient with CSS with these complications, which was fatal despite proper treatment.

A 64 year old woman with a 13 year history of urticaria, recurrent rhinitis, and asthma was admitted for abdominal pain. An increasing peripheral eosinophilia rising from 1% to 22% in the past five years was detected. Two years before hospital admission an extensive urticarial erythema developed. An abdominal ultrasonography performed during an asthmatic exacerbation when she had no abdominal pain disclosed a thick-walled gall bladder with no echogenic contents. An excited nasal polyp showed polyloid hyperplasia with many eosinophils. Abdominal ultrasound confirmed splenectomy, but no enlarged lymph nodes were detected. A bone isotope scan showed increased focal activity in the upper lumbar spine and lumbosacral junction, which was compatible with osteoporosis and degenerative changes.

An MRI scan showed extensive infiltration involving vertebral bodies and appendages throughout the lumbosacral spine, being most intense at the biconcave L5; the appearance was consistent with lymphoma or myeloma (fig 1).

During his stay in hospital, the patient’s pain resolved completely after treatment with non-steroidal anti-inflammatory drugs, analgesics, and physiotherapy. His haematologist started treatment of the patient with chlorambucil 10 mg/day for 10 days to be repeated every three weeks, these cycles to be continued for 12 months.

Eight months after the diagnosis of spinal lymphoma, the patient has remained well and active; his back pain is minimal.

In rheumatology, it is essential to differentiate between malignant disease and the more common causes of back pain. Our patient was in a good physical condition, which is unusual for someone with malignancy, his presentation with low back pain appeared to be a typical case of sciatica, and the pain settled down with conventional treatment. Clinically there was no evidence of recurrence of lymphoma—for example, enlarged lymph nodes, weight loss, or fever. However, because of his age at presentation and significant past history thorough investigations were mandatory.

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References


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Two and six weeks later she was readmitted owing to right upper quadrant pain. The leucocyte count was 1×10⁹/l with 34% eosinophils. Abdominal ultrasonography and computed tomography (CT) scans showed a calcified cholecystitis. A laparotomy disclosed a purulent peritoneal collection and enlarged inflamed gall bladder and right ovary. A cholecystectomy and right aneuryctomy were performed.

One month after surgery she was readmitted with severe abdominal pain, diarrhoea, and fever. The leucocyte count was 4.9×10⁹/l with 22% eosinophils, erythrocyte sedimentation rate (ESR) 7 mm/h, and haematocrit 39% (normal 45%); uric acid 7 mmol/l (normal 4.7), and serum urea and creatinine, complement C3 and C4, antinuclear antibody and antineutrophil cytoplasmic antibody values were normal or negative. The urine contained 300 mg/l proteins and the sediment 6–8 red cells/low power field, 3–5 leucocytes, and hyaline and hyaline casts. An abdomen CT scan showed moderate ascites. The ESR was 435 IU/ml. Purulent fluid in the peritoneal cavity and ascitic fluid was collected after reviewing the previous gallbladder samples. The evolution of the peripheral eosinophilia and ESR was very slow, and sometimes only diagnosed at necropsy. Abdominal ultrasonography should be included in the routine screening of patients with CSS.

The right oophoritis was due to vasculitis, with an eosinophilic infiltrate suggestive of CSS (fig 1). As far as we know, this is the first reported case of CSS with confirmed ovarian involvement.

The ascitic fluid, rich in eosinophils, the eosinophilic infiltration of major omentum samples and the clinical evolution suggest that the peritoneal involvement was due to the CSS, an extremely rare complication of this disease. Eosinophilic peritonitis was suggested by Lanham owing to sepsis involvement in the CSS, but has only been confirmed in one case so far.

The poor response to steroids and cyclophosphamide is striking. Despite the reduction of the peripheral eosinophila and ESR there was widespread eosinophilic bowel infiltration and vascular fibrinoid necrosis in the laparotomy samples. The evolution of the disease in our patient was catastrophic, especially as she had only one of the five Guillemin CSS mortality associated factors—namely, gastrointestinal involvement.

In summary, CSS abdominal complications should be promptly suspected and treated. In addition, CSS ovarian involvement, although rare, should be included in the differential diagnosis of ovary vasculitis.
22nd European Workshop for Rheumatology Research
28 Feb–3 Mar 2002; Leiden, The Netherlands
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Fax: +31 (0)71 526 6752
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Website: www.eurwr.org

Tenth Intensive Applied Epidemiology Course for Rheumatologists
11–15 Mar 2002; Manchester, UK
No previous experience in epidemiology is needed. The course is residential and limited to 25 places.
Contact: Ms Lisa McClair, ARC Epidemiology Unit, University of Manchester, Oxford Road, Manchester M13 9PT, UK
Tel: +44 (0)161 275 5993
Fax: +44 (0)161 275 5043
Email: Lisa@f1.ser.man.ac.uk
Website: www.annrheumdis.com

International Congress: New Trends in Osteoarthritis
9–11 May 2002; Milan, Italy
Contact: Organising Secretariat, O.I.C. S.R.L., Via Fatebenefratelli 19, 20121 Milan, Italy
Tel: +39 02 65 71 200
Fax: +39 02 65 71 270
Email: osteoarthritis@oic.it

10F World Congress on Osteoporosis
10–14 May 2002; Lisbon, Portugal
Contact: IOF Secretariat, 71 cours Albert Thomas, F–69003 Lyon, France
Tel: +33 472 91 41 77
Fax: +33 472 36 90 52
Email: info@ioflyon.org
Website: www.osteofound.org

5th European Conference on Systemic Lupus Erythematosus
26–30 May 2002; Athens, Greece
Chairman Professor HM Moutsopoulos
Secretariat: Amphithrion Congress Organising Bureau
Email: hmoutsop@med.uoa.gr
Website: congress@amphitrion.gr

Annual European Congress of Rheumatology
12–15 June 2002; Stockholm, Sweden
Contact: Fred Wyss, Executive Secretary EULAR, Witikonnerstrasse 15, CH-8032, Zürich, Switzerland
Tel: +41 1 383 9660
Fax: +41 1 383 9810
Email: eular@bluwin.ch
Website: www.eular.org

10th International Congress on Behcet’s Disease
27–29 June 2002; Berlin, Germany
Under the auspices of the International Society for Behcet’s Disease
Up to eight young investigator awards, each of $500, will be awarded on the basis of abstracts submitted
Contact: Professor Ch C Zoubboulis, Department of Dermatology, University Medical Centre Benjamin Franklin, The Free University of Berlin, Fabrikstrasse 60–62, 14195 Berlin, Germany
Fax: +49 30 84456908
Email: zoubboure@zedat.dfu-berlin.de
Website: www.userpages.dfu-berlin.de/~zoubboure
IBSD website: www.behcet.ws

29th Scandinavian Congress of Rheumatology
15–18 Aug 2002; Tromso, Norway
Contact: Hans Nossent, Department of Rheumatology, University Hospital Tromso, Norway
Tel: 47 776 27294
Fax: 47 776 27258
Email: 29scrr2002@rit.no or revhan@rit.no

Translational Research in Autoimmunity
21–22 Sep 2002; Pavia, Italy
Contact: Organising secretariat: eventi S.R.L., Corso Cavour, 18/20 - 27100 Pavia, Italy
Email: tra@e20pr.com
Website: www.e20pr.com
Congress website: www.medicine.ucsd.edu/albani/2001meeting

OsteoArthritis Research Society International (OARSI) World Congress
22–25 Sep 2002; Sydney, Australia
Contact: OsteoArthritis Research Society International (OARSI), 2025 M Street, NW, Suite 800, Washington DC 20036, USA
Tel: +1 202 367 1177
Fax: +1 202 367 2177
Email: oarsi@oarsi.org
Website: www.oarsi.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
Tel: 972 3 5140018/9
Fax: 972 3 5140077 or 972 3 5172484
Email: aps@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.eayne.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
Tel: +1 404 633 3777
Fax: +1 404 633 1870
Email: acr@acr.org
Website: www.rheumatology.org

Third International Meeting on Social and Economic Aspects of Osteoporosis and Osteoarthritis
7–9 November 2002; Barcelona, Spain
Contact: Yolande Pieth Communication, Boulevard Kleyer 108, 4000 Liège, Belgium
Tel: 32 4 254 12 25
Fax: 32 4 254 12 90
Email: ypc@compuserve.com

Certifying Examination in Pediatric Rheumatology
18 Nov 2002
Contact: American Board of Pediatrics, 111 Silver Cedar Court, Chapel Hill, NC 27514-1513, USA
Tel: 919 929 0461
Fax: 919 918 7114 or 919 929 9255
Website: www.abp.org

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9–12 June 2004; EULAR 2004 Berlin, Germany
8–11 June 2005; EULAR 2005 Vienna, Austria
21–24 June 2006; EULAR 2006 Amsterdam, The Netherlands