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Scleroderma and failed response to alefacept

Sir. We report the case of a 58-yr-old female who complained of increasing tightness and tingling pain in the hands and face for several weeks. The patient had been well until 3 months previously when she developed flu-like symptoms followed by fatigue, fever and puffiness of the hands. She also noted that blanching with subsequent cyanosis and redness of fingers became evident on exposure to cold. In addition, dry eyes and mouth were also recognized.

One week later, she developed bilateral leg oedema and low back pain along with arthralgia of the knees and ankles. She also felt that the skin over her neck and shoulders became thicker and tighter. The possibility of progressive systemic sclerosis (PSS) was raised and she was admitted for further evaluation.

The family history revealed that her second son had Reiter’s syndrome and her third son had ankylosing spondylitis. Both sons were positive for human leucocyte antigen (HLA) B27 molecule.

The important laboratory findings were as follows: erythrocyte sedimentation rate (ESR) 17 mm/h, antinuclear antibodies (ANA) titre 1:1280 (speckled and nucleolar pattern), complement C3 51.5 mg/dl (normal 90–180 mg/dl), complement C4 <5.42 mg/dl (normal 10–40 mg/dl), HLA-B27 positive. Tests for haemoglobin, leucocyte count, C-reactive protein, anti-extractable nuclear antigen (ENA) antibodies, antocardiolipin antibodies, lupus anticoagulants, rheumatoid factor and perinuclear types of antineutrophil cytoplasmic antibodies (ANCA) were all normal or negative. IgM and IgG antibodies to parvovirus B19 and Epstein–Barr viral capsid antigen were all positive.
Imaging studies showed mild right sacroiliitis and C3–6 herniated intervertebral discs. Lesional skin biopsy of the wrist was performed for histology and characterization of B19 virus by DNA in situ hybridization was positive. The microscopic appearance of the sclerotic skin lesion is shown in Fig. 1.

Diagnosis of progressive systemic sclerosis was confirmed. The patient was treated with pulsed methylprednisolone followed by oral prednisolone, hydroxychloroquine, colchicine and oral methotrexate. As she did not respond to all of these therapies, we administered weekly intramuscular alefacept, a recombinant human lymphocyte function-associated antigen-3 (LFA-3) IgG1 fusion protein. However, no improvement of the Ranson scleroderma score was noted after 3 months of treatment.

PSS is a complicated autoimmune disease whose aetiology remains unknown and there is increasing evidence implicating the involvement of infectious agents, such as parvovirus B19 [1, 2], in its pathogenesis. We present here a patient with scleroderma and possible concurrent infection with parvovirus B19 and Epstein–Barr virus (EBV). Active parvovirus B19 and EBV infection were documented by positive IgM in serum by enzyme-linked immunosorbent assay and in situ hybridization in skin biopsy. On reviewing the literature, parvovirus B19 is shown to be able to establish latency in the bone marrow [3], from where the virus could spread to target tissues, and significant elevation of the virus DNA in the skin of systemic sclerosis patients has been proved [4]. To assume a cause and effect relationship between parvovirus B19 and scleroderma is an attractive concept; however, the demonstration of the viral DNA could be due to non-specific immune stimulation.

In the absence of any recognized effective treatment for scleroderma, we tried alefacept, the recombinant human lymphocyte function-associated antigen-3 (LFA-3) IgG1 fusion protein, which can inhibit T-lymphocyte activation via blockade of LFA-3 and CD2 co-stimulation between memory effector T cells and antigen-presenting cells. Alefacept was approved by the US Food and Drug Administration for chronic plaque psoriasis [5], but there are no reports of its use in scleroderma patients. However, the scleroderma symptoms persisted without conspicuous alleviation, suggesting that the LFA-3-CD2 signalling pathway may play little or no role in the immunopathogenesis of scleroderma.

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Predictors of medication adherence in people with rheumatoid arthritis: studies are necessary but non-validated measures of medication adherence are of concern

SIR, We read with interest the study by Neame and Hammond [1] investigating medication beliefs and their relationship with medication adherence among people with rheumatoid arthritis (RA). The study tackles an important issue with serious implications for both patients and health professionals. However, there are some concerns that may limit the value of this study’s conclusions.

Neame and Hammond’s categorization of participants into adherent vs non-adherent groups [1] is questionable but is not discussed as a limitation of the study. Medication adherence was assessed by a single question (‘I often do not take my medicines as directed’) drawn from the Rheumatism Attitudes Index [2]; it is not stated whether this had been validated against any other measure of medication adherence. In addition, participants were not provided either with a benchmark for the frequency context of this question (‘often’) or with how exact they had to be with timing (‘as directed’). This may be particularly hard for patients to grasp for medications taken on a weekly basis, such as the very commonly used methotrexate. Furthermore, the distribution of answers across the five possible responses to the medication adherence question was not reported. This was skewed, given that only 27 patients (8%) self-reported being non-adherent out of a total of 331. This is considerably lower than the range reported in the literature (30–50%), which the authors themselves state.

We have previously carried out a similar study [3], also using the Beliefs about Medicines Questionnaire (BMQ) [4], among British RA patients. We measured medication adherence on a well-validated questionnaire scale: de Klerk et al.’s Compliance-Questionnaire-Rheumatology (CQR) [5]. Participants answer the CQR by rating their agreement on 19 items originally derived from interviews with patients, such as ‘If you can’t stand the medicines you might say: ‘throw it away, no matter what’’. However, the CQR avoids emphasis on non-adherence, with 13 adherence-facilitating behaviours assessed; for example, ‘My medicines are always stored in the same place, and that’s why I don’t forget them’. The CQR compares well with electronic monitoring of medication container openings (across 6 months), which revealed a prevalence rate of non-adherent cases of 48% [5].

The main aim of Neame and Hammond’s study [1] was to investigate the use of the BMQ among RA patients. Although they provided item means and distribution plots of the specific necessity and concerns subscale scores, they did not report basic psychometric properties, such as internal consistency and the correlation between the two subscales. In our study [3], the correlation between BMQ-specific necessity beliefs and concerns was negligible ($r = -0.04$), demonstrating acceptable independence. The necessity subscale demonstrated excellent internal consistency (Cronbach’s $\alpha = 0.88$) but the concerns subscale was below acceptable levels (Cronbach’s $\alpha = 0.56$), suggesting multiple factors may exist within concerns.

The general medication beliefs that RA patients hold also warrant investigation. These beliefs are measurable by the two additional subscales of the BMQ, both containing only four items. General harm beliefs are perceptions that medications are inherently dangerous; overall overuse beliefs are perceptions that medications are prescribed too commonly [4]. Neame and Hammond [1] did not report on these general medication beliefs but did find that non-adherent patients had greater concerns about their medications than adherent patients. Hence, they suggest that rheumatologists could improve medication adherence by focusing on reducing specific medication concerns. However, in our multivariate regression of medication adherence measured by the CQR we found a different pattern of relationships [3]. Firstly, we controlled for demographic and medical factors. This showed that the greater the number of medications participants were taking, the higher their reported medication adherence. Secondly, specific medication concerns did not relate to medication adherence, contrary to Neame and Hammond’s findings [1]. Instead, we found that higher specific necessity beliefs and lower general overuse beliefs concurrently related to higher medication adherence. This would suggest that RA patients on few medications and those who think that medications are prescribed too commonly or do not think their own medications are necessary are the cases who should be targeted to reduce medication non-adherence.

Finally, we agree with Neame and Hammond [1] that longitudinal studies are now required to investigate causality and determine whether medication beliefs predict long-term adherence to the many types of medications that RA patients are prescribed. We would recommend that future studies should employ a validated measure of medication adherence and consider the full range of medication beliefs from the general literature [4, 6] and RA-specific studies [7].

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