

Correspondence

INSTRUCTIONS FOR LETTERS TO THE EDITOR

Editorial comment in the form of a Letter to the Editor is invited; however, it should not exceed 800 words, with a maximum of 10 references and no more than 2 figures (submitted as camera ready hard copy per Journal Guidelines) or tables and no subdivision for an Abstract, Methods, or Results. Letters should have no more than 3 authors. Full name(s) and address of the author(s) should accompany the letter as well as the telephone number, fax number, or E-mail address.

Contact: The Managing Editor, The Journal of Rheumatology, 365 Bloor Street East, Suite 901, Toronto, ON CANADA M4W 3L4. Tel: 416-967-5155; Fax: 416-967-7556; E-mail: jrheum@jrheum.com Financial associations or other possible conflicts of interest should always be disclosed.

No Significant Sex Differences in Temporal Arteritis

To the Editor:

In recent issues of *The Journal*, Narváez, *et al*¹ and Nir-Paz, *et al*² reported their experience on sex-specific differences in giant cell arteritis (GCA). Narváez, *et al* found that among 163 patients with GCA, including 73 with temporal arteritis (TA), the presence of constitutional symptoms was significantly more frequent in women than in men. Women also had a more protracted inflammatory response on laboratory measures. Nir-Paz, *et al* evaluated 88 patients with either isolated polymyalgia rheumatica (PMR) or TA and found that men and women with GCA differ on their history, presentation, and laboratory findings. Notably, the finding that men are more prone than women to develop irreversible visual ischemia led these investigators to recommend a more aggressive treatment approach to male patients.

These important results compelled us to reexamine the relationship between sex and clinical presentation and prognosis in a large series of patients with TA. Our results, briefly presented below, do not support the view of major sex-related differences in the presenting features of TA, and do not indicate that TA is a more severe disease in men.

Since 1976, we diagnosed and followed 234 patients with TA (190 biopsy-proven, 65 with associated PMR). Diagnosis was according to current criteria³. Data were collected prospectively using a comprehensive 174-item questionnaire. Eighty-one patients were men, with a sex ratio of 0.52. All patients were treated according to an established protocol⁴ and 215 patients were followed regularly (mean 11 outpatient visits and hospital admissions per patient) for a mean period of 44.6 ± 37.9 months. In addition, 30 patients initially received disulone as part of the therapeutic protocol⁵. Men received disulone more often than women (19.2% vs 11.3%), but the difference was not relevant statistically.

The results of a comparative study of clinical, laboratory, and pathologic features in men and women with TA are shown in Table 1. Men were slightly younger than women. The only sex-related differences in the frequency of disease manifestations were a lower prevalence of rheumatic symptoms and occipitalgia, and a trend toward a higher prevalence of scalp tenderness in men. Permanent visual loss occurred less often in men (8.6%) than in women (14.4%; nonsignificant). The only significant difference in

laboratory values was a lower hemoglobin level in women, a self-evident finding. Finally, similar percentages of a positive temporal artery biopsy result were observed in men and women.

A comparative study of comorbid conditions, treatment, outcome, and prognosis in men and women with TA is given in Table 2. Male and female patients did not differ by medical history, the starting prednisone dose, the mean decrement in prednisone dose at 3, 6 and 12 months, mean number of disease relapses, or mean number and type of serious treatment-related side effects. An equal proportion of men and women recovered from TA or died during treatment, and the mean duration of treatment in 110 patients who recovered from TA was not influenced by sex (27.7 ± 14.5 mo in men vs 26.5 ± 12.7 mo in women; NS). Additionally, 10 out of 27 patients whose treatment was continuing at the time of study and had lasted more than 30 months were men.

In this large homogeneous series of patients with TA, we found only subtle sex-related differences in the clinical presentation at diagnosis, in accord with the results of Narváez, *et al*. However, we could not confirm on clinical or laboratory grounds the finding by these investigators of a stronger inflammatory response. The reason men have less specific rheumatic manifestations than women is not known to us, but this observation compares with a male to female ratio of 2 to 3 seen in large series of cases of PMR^{6,7}.

More important, the prognosis for visual manifestations did not appear to be worse in male patients. On the contrary, men more often recalled transient visual ischemic symptoms but less frequently developed permanent visual sequelae, compared with women. We have shown previously that the mean platelet count was the only independent predictor for permanent loss of vision in patients with TA, irrespective of the temporal artery biopsy result⁴. We also noted that patients aged 80 years and older had the worst visual prognosis, particularly bilateral irreversible blindness⁸, but that sex had no influence on visual sequelae. Accordingly, 6 studies totaling more than a thousand patients with TA found no differences in sex distribution in patients with and without permanent visual loss⁹⁻¹⁴.

Finally, beyond the useful considerations on variants of disease presentation, our study, validated by a large sample size and the fact that patients were treated homogeneously and followed closely, emphasizes that men and women with TA possibly share the same prognosis.

ERIC LIOZON, MD; ANNE-LAURE FAUCHAIS, MD; VÉRONIQUE LOUSTAUD, MD; ELISABETH VIDAL, MD, Service de Médecine Interne A, CHRU Dupuytren, 2 rue Martin Luther-King, 87042 Limoges, France. E-mail : eric.liozon@unilim.fr

REFERENCES

1. Narvaez J, Nolla-Solé JM, Valverde-Garcia J, Roig-Escofet D. Sex differences in temporal arteritis and polymyalgia rheumatica. *J Rheumatol* 2002;29:321-5.
2. Nir-Paz R, Gross A, Chajek-Shaul T. Sex differences in giant cell arteritis. *J Rheumatol* 2002;29:1219-23.
3. Hunder GG, Bloch BA, Michel DA, et al. The American College of Rheumatology 1990 criteria for the classification of giant cell arteritis. *Arthritis Rheum* 1990;33:1122-8.
4. Liozon E, Herrmann FR, Ly K, et al. Risk factors for visual loss in giant cell (temporal) arteritis: a prospective study of 174 patients. *Am J Med* 2001;111:211-7.
5. Liozon F, Vidal E, Barrier JH. Dapsone in giant cell arteritis treatment. *Eur J Intern Med* 1993;4:207-14.
6. Sen D, Scott DGI, Harvey I, Shlepstone L. The epidemiology of polymyalgia rheumatica and giant cell arteritis: a community based study in the UK [abstract]. *Arthritis Rheum* 1999;42 Suppl:S300.
7. Doran MF, Crowson CS, O'Fallon WM, Hunder GG, Gabriel SE. Trends in the incidence of polymyalgia rheumatica over a 30 year period in Olmsted County, Minnesota, USA. *J Rheumatol* 2002;29:1694-7.
8. Liozon E, Loustaud-Ratti, Ly K, et al. Visual prognosis in

Table 1. Comparative study of clinical, laboratory, and pathologic features in men and women with temporal arteritis.

Data	Results ^{††}		p ^{**}
	Men, n = 81	Women, n = 153	
Age, yrs	74	75.7	0.09
Associated neoplasm	10 (12.3)	9 (5.9)	0.08
Acute disease onset	28 (35)	59 (39.1)	0.54
Delay in diagnosis, days	65.2 ± 80	86 ± 104	0.11
Abnormal temporal artery	44 (55)	79 (52.3)	0.69
Rheumatic symptoms	19 (23.8)	59 (38.7)	0.02
Masked (or occult) presentation	8 (10)	15 (9.7)	0.99
Upper limb artery involvement	11 (13.6)	28 (18.3)	0.37
Headaches	67 (82.7)	130 (85)	0.62
Severe	46 (59)	78 (51.3)	0.6
Occipitalgia	29 (35.8)	79 (53.4)	0.01
Scalp tenderness	48 (60)	59 (45)	0.06
Ear-throat-mouth symptoms*	41 (51.3)	91 (60.3)	0.18
Jaw claudication	24 (30)	55 (36.4)	0.38
Constitutional symptoms**	59 (72.8)	110 (72.8)	0.9
Transient visual ischemic symptoms***	23 (28.4)	29 (19.1)	0.1
Permanent visual loss	7 (8.6)	22 (14.3)	0.2
Cerebrovascular accident	3 (3.7)	10 (6.5)	0.5
Positive temporal artery biopsy	67 (82.7)	123 (80.4)	0.7
Abnormal liver tests [†]	35 (49.3)	57 (46.3)	0.69
Erythrocyte sedimentation rate, mm/h	89.4 ± 27	89.5 ± 27	0.9
C-reactive protein, mg/l	103.7 ± 68	91 ± 56	0.16
Haptoglobin, mg/l	4798 ± 1545	4677 ± 1976	0.13
Hemoglobin, g/dl	12.2 ± 2	11.1 ± 1.8	0.03
Platelet count (GI)	407149 ± 143292	471964 ± 159785	0.13
Anticardiolipin antibody positivity (IgG)	16 (41)	33 (39.8)	0.1

* Including at least one of the following: jaw claudication, pain upon opening mouth or trismus, maxillary pain, dysphagia, sore throat, hoarseness, lingual discomfort, and dry cough. ** Body temperature ≥ 38°C for at least one week and/or weight loss of 5% or more and/or severe asthenia. *** Amaurosis fugax and/or acutely blurred vision and/or diplopia. † At least one test above normal among the following: alkaline phosphatase, gammaglutamyltranspeptidase, glutamic oxaloacetic transaminase, glutamic pyruvic transaminase. †† Number or mean (percentage or range or ± SD). ‡ Chi-square test, Fisher exact test, or Mann-Whitney U test, as needed.

extremely old patients with temporal (giant cell) arteritis. *J Am Geriatr Soc* 2003;51:722-3.

9. de Keyser J, De Klippel N, Ebinger G. Thrombocytosis and ischaemic complications in giant cell arteritis. *BMJ* 1991;303:825.
10. Liu GT, Glaser JS, Schatz NJ, Smith JL. Visual morbidity in giant cell arteritis. Clinical characteristics and prognosis for vision. *Ophthalmology* 1994;101:1779-85.
11. Font C, Cid MC, Coll-Vinent B, Lopez-Soto A, Grau JM. Clinical features in patients with permanent visual loss due to biopsy-proven giant cell arteritis. *Br J Rheumatol* 1997;36:251-4.
12. Cid MC, Font C, Oristrell J, et al. Association between strong inflammatory response and low risk of developing visual loss and other cranial ischemic complications in giant cell (temporal) arteritis. *Arthritis Rheum* 1998;41:26-32.
13. Hayreh SS, Podhajsky PA, Zimmerman B. Ocular manifestations of giant cell arteritis. *Am J Ophthalmol* 1998;125:509-20.
14. Gonzalez-Gay MA, Blanco R, Rodriguez-Valverde V, et al. Permanent visual loss and cerebrovascular accidents in giant cell arteritis. *Arthritis Rheum* 1998;41:1497-504.

Drs. Nir-Paz and Chajek-Shaul reply

To the Editor:

Liozon, *et al* raise once more the intriguing question of sex differences in giant cell arteritis (GCA). This question has been discussed by us and oth-

ers¹⁻⁸. In their careful cohort study they show that response to treatment is similar in both men and women, a finding not universally reproduced in other studies⁷. However, are men and women really alike in their expression of GCA, in both the clinical presentation and response to treatment?

As reported in several studies, the ratio of women to men with GCA is 2. Other differences are noted as well. Women in the Liozon series tend to have more rheumatic symptoms and occipitalgia, while men have scalp tenderness more commonly. Women are also more severely anemic, a feature reported in other studies^{3,5}.

At presentation, we found that men are more prone than women to have visual impairment⁵, a finding not reproduced by Liozon, *et al*. Moreover, they report a trend for a milder form of blindness in men. In our logistic regression model for predicting blindness we found that the combination of being a male and having a positive GCA pathology was protective against blindness (p < 0.008).

As we reported⁵, some of the main differences between the sexes of our patients were noted in the medical history. Men more often had diabetes mellitus, as well as more frequent cerebrovascular accidents and chronic renal failure. But the overall prevalence of background diseases was the same for both sexes. As described by Duhaut, *et al*⁶, French patients have a lower incidence of "vasculopathic" comorbidities such as non-insulin-dependent diabetes mellitus. Smoking and previous vascular disease were thought to be associated with GCA in women in this study. This observation gains support from a recent report from Sweden⁷, in which a higher mortality due to vascular diseases was observed, especially in women with GCA.

Table 2. Comparative study of response to treatment, treatment-related side effects, recovery from vasculitis, and outcome in men and women with temporal arteries.

Data	Results*		p**
	Men†	Women†	
Starting prednisone dose, mg/day	0.76 (0.15)	0.76 (0.16)	0.83
Additional use of disulone	14 (19.2)	16 (11.3)	0.12
Mean decrement in prednisone dose at 3 mo, %	56.4 (11.1)	54.6 (11.9)	0.30
Mean decrement in prednisone dose at 6 mo, %	67 (10.8)	67.2 (10.9)	0.91
Mean decrement in prednisone dose at 12 mo, %	82 (10.1)	80.9 (10.8)	0.58
Mean no. of disease flares or relapses per patient	0.69 (0.79)	0.73 (0.85)	0.79
Mean no. of comorbid conditions per patient	1.02 (1.01)	0.99 (0.9)	0.76
Patients with cardiovascular diseases††	30 (42.2)	71 (52.2)	0.19
Mean no. of serious steroid related complications per patient	1.36 (1.37)	1.31 (1.21)	0.78
Vertebral or hip fracture	10 (14.5)	33 (25)	0.16
Hypertension and/or pulmonary embolism	11 (15.9)	19 (14.1)	0.83
Muscle weakness	18 (26.1)	37 (27.6)	0.84
Infection	23 (33.3)	35 (25.9)	0.32
Diabetes	14 (20.3)	16 (11.9)	0.14
Gastric or duodenal ulcer	3 (4.3)	5 (3.7)	0.99
Other iatrogenic problems	7 (10.1)	10 (7.4)	0.59
Mean duration of steroid treatment, mo	25.7 (16.3)	23.7 (15.7)	0.39
Length of followup, mo	49.2 (38.1)	44.7 (37.7)	0.41
Recovery from temporal arteritis	42 (57.5)	68 (47.9)	0.19
Duration of treatment in patients who recovered, mo	27.7 (14.6)	26.5 (12.7)	0.85
Death, overall	22 (30.1)	41 (28.9)	0.83
During treatment	14 (19.2)	28 (19.7)	0.99

† For each data value, the number of patients available varied from 69 to 73 for men, and 131 to 135 for women.

†† Defined by at least one of the following: Hypertension, ischemic heart disease, arrhythmia, stroke. * Number or mean (percentage or range \pm SD). ** Chi-square test, Fisher exact test, or Mann-Whitney U test, as needed.

Different populations may have different patterns of sex differences in GCA, while some variables are measured differently in different studies, suggesting differences that may not exist in fact. As we suggested in our study, in order to observe sex differences a comparison to the general population should be performed as well.

Although Liozon, *et al* did not find major differences between the sexes, they found some evidence to support our previous study. Further population-based studies on an international basis may shed more light on the intriguing question of sex differences in GCA.

RAN NIR-PAZ, MD; TOVA CHAJEK-SHAUL, MD, Department of Medicine, Hadassah University Hospital, Jerusalem, Israel.

REFERENCES

- Nordborg C, Nordborg E, Petursdottir V, Fyhr IM. Calcification of the internal elastic membrane in temporal arteries: its relation to age and gender. *Clin Exp Rheumatol* 2001;19:565-8.
- Duhaut P, Pinede L, Demolombe-Rague S, et al. Giant cell arteritis and cardiovascular risk factors: a multicenter, prospective case-control study. *Arthritis Rheum* 1998;41:1960-5.
- Gonzalez-Gay MA, Garcia-Porrúa C, Amor-Dorado JC, Llorca J. Influence of age, sex, and place of residence on clinical expression of giant cell arteritis in northwest Spain. *J Rheumatol* 2003;30:1548-51.
- Nueninghoff DM, Hunder GG, Matteson EL. Sex differences in giant cell arteritis [letter]. *J Rheumatol* 2003;30:1119-20.
- Nir-Paz R, Gross A, Chajek-Shaul T. Sex differences in giant cell arteritis. *J Rheumatol* 2002;29:1219-23.
- Nordborg C, Johansson H, Petursdottir V, Nordborg E. The epidemiology of biopsy-positive giant cell arteritis: special reference to changes in the age of the population. *Rheumatology*

Oxford 2003;42:549-52.

- Uddhammar A, Eriksson AL, Nystrom L, Stenling R, Rantapaa-Dahlqvist S. Increased mortality due to cardiovascular disease in patients with giant cell arteritis in northern Sweden. *J Rheumatol* 2002;29:737-42.
- Narvaez J, Nolla-Solé JM, Valverde-Garcia J, Roig-Escofet D. Sex differences in temporal arteritis and polymyalgia rheumatica. *J Rheumatol* 2002;29:321-5.

Dr. Narváez replies

To the Editor:

I read with interest the letter by Liozon, *et al* presenting their experience on sex-specific differences in temporal arteritis (TA). They compare their results with the 2 main studies that analyzed this question, including our work^{1,2}.

The main purpose of our report was to draw attention to the possible importance of sex hormones in TA and polymyalgia rheumatica (PMR). Sex differences are known to exist for many autoimmune diseases. The marked female predominance observed in TA and PMR suggests that sex hormones may play a role in etiology and/or disease expression, although the precise significance of this is still not understood because until recently sex-specific differences in both conditions were not extensively explored. We found modest differences in disease expression between women and men. In the 2 conditions, the inflammatory response seemed to be more severe in women, with greater abnormalities in clinical (constitutional syndrome and fever) and laboratory markers of inflammation. No significant differences in the classical features of TA were observed. Although this has not been clearly elucidated before, 2 other reports on TA from Spanish groups also described a strong inflammatory response in women, supporting our results^{3,4}. Whether this strong inflammatory

response observed in women implies a lower risk of developing visual loss and other cranial ischemic complications in TA is still controversial, since studies addressing the association between the inflammatory response and the risk of developing irreversible cranial ischemic complications have produced conflicting results⁵⁻⁷. In this regard, we found no differences in the incidence of visual complications by sex. We hypothesized that the more severe inflammatory response observed in women could explain the longer duration of treatment reported in this subgroup of patients in both PMR and TA, regardless of the treatment regimen⁸⁻¹². Together, these observations indicate that female patients with these conditions can be at particularly high risk for steroid toxicity, a hypothesis that has been demonstrated in PMR¹³.

An additional article addressing sex-specific differences in TA and PMR was published later². In this hospital based study of patients from Israel with either isolated PMR or TA, Dr. Nir-Paz and colleagues found that men and women with both conditions differed in their history, presentation, and laboratory findings. One conclusion of these authors is that ophthalmic involvement, specifically blindness, is more common in men. However, these findings have generated controversy, and recently some investigators have questioned the value of this study for making assumptions about sex-dependent disease characteristics of TA due to its methodological limitations¹⁴.

Thus the report from Dr. Liozon and colleagues is welcome in order to clarify this issue. Their findings only partially confirm our results, and also reveal subtle sex-related differences in the clinical presentation at diagnosis, without significant differences in the incidence of visual complications by sex. Regarding the laboratory markers of inflammation, they observed lower hemoglobin values in women than in men, without significant sex differences in other measures. Moreover, and contrary to other reports, they did not observe sex differences in the mean duration of treatment or in the incidence of treatment-related side effects. I cannot explain why their results are substantially different in many aspects from previous studies. It seems improbable that these differences can be explained by ethnic differences among different populations, because in another study on TA and PMR from France, Delecoeuillerie and colleagues¹⁵ found (in contrast to the findings reported by Liozon, *et al*) that men were more likely to experience visual and other ischemic complications than women, suggesting that "a worse prognosis seems attached to the male sex in TA." For this reason, the most acceptable hypothesis is that these differences could be related to methodologic differences, including different study designs (prospective versus retrospective studies), selection bias, or the use of specially designed versus standard patient files (the evaluation of clinical findings, when they are mild and do not emerge from a specifically designed study, may have remarkable interobserver variation). In view of these contradictory observations, prospective, multicenter, population based studies will be required to establish universally accepted, clinically relevant conclusions.

While awaiting new data, on the basis of the available studies I feel that sex hormones play a role in the etiology and disease expression of both TA and PMR. This hormonal influence results in a marked female predominance, with a more severe inflammatory response and longer duration of treatment in women. It seems there are not significant sex differences for the risk of visual loss and other cranial ischemic complications; in this clinical aspect, women and men seem to have a similar prognosis.

JAVIER NARVÁEZ, MD, Rheumatology Unit, Department of Internal Medicine, Clínica Delfos, Barcelona, Spain. E-mail: 31577edd@comb.es

REFERENCES

1. Narvaez J, Nolla-Solé JM, Valverde-García J, Roig-Escofet D. Sex differences in temporal arteritis and polymyalgia rheumatica. *J Rheumatol* 2002;29:321-5.
2. Nir-Paz R, Gross A, Chajek-Shaul T. Sex differences in giant cell arteritis. *J Rheumatol* 2002;29:1219-23.
3. Calvo Romero JM, Magro Ledesma D, Ramos Salado JL, et al.

Giant cell arteritis: a descriptive study in south-western Spain. *An Med Interna Madrid* 2000;17:67-70.

4. Armona J, Rodríguez-Valverde V, González-Gay MA, et al. Giant cell arteritis. Study of 191 patients. *Med Clin Barc* 1995;105:734-7.
5. Cid MC, Font C, Oristrell J, et al. Association between strong inflammatory response and low risk of developing visual loss and other cranial ischemic complications in giant cell (temporal) arteritis. *Arthritis Rheum* 1998;41:26-32.
6. Neshar G, Sonnenblick M. No association between the inflammatory response and the risk of developing irreversible cranial ischemic complications: comment on the article by Cid et al [letter]. *Arthritis Rheum* 1998;41:2088.
7. Liozon E, Jauberteau MO, Loustaud V, Vidal E. Association between the inflammatory response and the risk of developing irreversible cranial ischemic complications: comment on the article by Cid, et al and the letter by Neshar and Sonnenblick [letter]. *Arthritis Rheum* 1999;42:2256-8.
8. Narvaez J, Nolla-Solé JM, Clavaguera MT, Valverde-García J, Roig-Escofet D. Longterm therapy in polymyalgia rheumatica: Effect of coexistent temporal arteritis. *J Rheumatol* 1999;26:1945-52.
9. Chuang TY, Hunder GG, Ilstrup DM, Kurland LT. Polymyalgia rheumatica. A 10 year epidemiologic and clinical study. *Ann Intern Med* 1982;97:672-80.
10. Ayoub WT, Franklin CM, Torreti D. Polymyalgia rheumatica: Duration of therapy and long-term outcome. *Am J Med* 1985;79:309-15.
11. Ashraf F, Belilos E, Terenci T, Carsons SE. Gender specific differences in treatment outcomes in polymyalgia rheumatica [abstract]. *Arthritis Rheum* 2000;43 Suppl:1778.
12. Nordborg E, Nordborg C, Malmvall BE, Andersson R, Bengtsson BA. Giant cell arteritis. *Rheum Dis Clin North Am* 1995;21:1013-26.
13. Gabriel SE, Sunku J, Salvarini C, O'Fallon WM, Hunder GG. Adverse outcomes of antiinflammatory therapy among patients with polymyalgia rheumatica. *Arthritis Rheum* 1997;40:1873-8.
14. Nuenninghoff DM, Hunder GG, Matteson EL. Sex differences in giant cell arteritis: comment on the article by Nir-Paz, et al [letter]. *J Rheumatol* 2003;30:1119-20.
15. Delecoeuillerie G, Joly P, Cohen de Lara A, Paolaggi JB. Polymyalgia rheumatica and temporal arteritis: a retrospective analysis of prognostic features and different corticosteroid regimens (11 year survey of 210 patients). *Ann Rheum Dis* 1988;47:733-9.

Disease Modifying Antirheumatic Drugs and Pregnancy

To the Editor:

The article by Dr. Chakravarty, *et al*¹ points out the need for better data on the use of disease modifying antirheumatic drugs (DMARD) by pregnant women. The article also provides a reminder to rheumatologists about their responsibility to counsel women of childbearing potential regarding potential fetal risks from gestational drug exposures and the need for continued vigilance to prevent pregnancy while taking these drugs. Such counseling may also provide the opportunity to discuss the woman's interest in future pregnancy and provide preconception counseling regarding the potential complications of her disease for pregnancy including the risk of adverse pregnancy outcome and the potential for worsening of disease with pregnancy.

Little is known about the teratogenic potential of most drugs. Misinformation about drug risk in pregnancy is prevalent due to inadequate data collection methodologies. While the authors should be commended for their attempt to provide much needed information, the retrospective collection of human pregnancy outcomes via a survey of physicians represents

one such inappropriate methodology. Such data cannot be used to provide an estimate of risk as was done for methotrexate in this article. To provide an estimate of risk, prospective data collection that provides a numerator and denominator as well as an appropriate comparator group is needed.

The authors do discuss some limitations of their study; however, other limitations include barriers to physicians to reply to the survey and lack of information on how pregnancy exposures were ascertained. The low response rate (29%) may reflect a real or perceived medical, legal, or ethical conflict of interest and physicians may be reluctant to disclose information on pregnancy outcome without maternal consent. Another bias surrounds the ascertainment of outcome, including who did the ascertainment and when it was done. The obstetrician or the rheumatologist may be far removed from an accurate ascertainment of infant health and mothers may not be the best source to acquire adequate information regarding congenital anomalies. Information on live infant outcomes should be obtained from the infant's health care provider. Limiting ascertainment of infant outcome at birth versus at later time in infancy, e.g., at 3 months, will limit the number and type of major malformations reported². Misclassification of outcomes may lead to erroneous conclusions.

To proactively encourage the conduct of well designed, scientifically valid studies in pregnancy, the US Food and Drug Administration (FDA) recently published a guidance document on establishing pregnancy exposure registries (<http://www.fda.gov/cder/guidance/3626fnl.pdf>). In these studies, physicians prospectively enroll their patients after exposure to a drug during pregnancy but before the outcome of pregnancy is known. Patients can also self-enroll. These prospective registries offer the opportunity to apply real-world clinical practice data on risk, or lack of risk, to ultimately benefit patient care.

Unfortunately, the authors missed an excellent opportunity to encourage rheumatologists to utilize ongoing epidemiologic studies that collect information on antirheumatic drug exposure during pregnancy. The manufacturer of Arava[®] (leflunomide) is currently enrolling pregnant women exposed to their drug in such a registry; the labeling, or package insert, for the product includes a toll-free telephone number for physicians to register exposed pregnant patients³. In addition, the Organization of Teratology Information Services (OTIS) is conducting the Rheumatoid Arthritis and Pregnancy Study, a prospective study to evaluate risks to the embryo or fetus with the use of rheumatoid arthritis medications in pregnancy. A list of pregnancy exposure registries in progress for other drugs is available at www.fda.gov/womens/registries/default.htm

Current FDA regulations, promulgated in 1979, require prescription medication labeling to contain a Pregnancy Subsection that includes a pregnancy letter category (A, B, C, D, or X) that addresses fetal risk of developmental abnormalities. The FDA recognizes these categories, usually based only on animal data, can be misleading and that for most products the pregnancy subsection of product labeling provides inadequate information either for prescribing drugs to pregnant women or for counseling about fetal risks. However, multiple other resources are available to assist physicians in assessing reproductive toxicities from drug exposures. For example, the on-line REPRORISK system available from Micromedex, Inc. contains electronic versions of 4 teratogen information databases: REPROTEXT, REPROTOX (www.reprotox.org), *Shepard's Catalog*⁴, and TERIS⁵. These periodically updated, scientifically reviewed resources critically evaluate the literature regarding human and animal pregnancy drug exposures. Other sources of information are the more than 20 comprehensive multidisciplinary Teratogen Information Services (TIS) located in the US and Canada, which provide patient counseling and risk assessments regarding exposures during pregnancy (www.otispregnancy.org).

With an eye to the future, the FDA Pregnancy Labeling Task Force is working to improve the quantity and quality of data available in product labeling on the use of drugs during pregnancy and is in the process of revising the regulations that govern pregnancy labeling to delete the pregnancy category scheme and promote the inclusion of more useful clinical information in a narrative format⁶.

KATHLEEN UHL, MD; DIANNE L. KENNEDY, RPh, MPH. Pregnancy Labeling Task Force, Center for Drug Evaluation and Research, US Food and Drug Administration, 1451 Rockville Pike, HFD-020, Rockville, Maryland 20852, E-mail: uhl@cderr.fda.gov; WILLIAM R. GILLILAND, MD, Department of Rheumatology, Uniformed Services University of the Health Sciences, Bethesda, Maryland, USA.

REFERENCES

1. Chakravarty EF, Sanchez-Yamamoto D, Bush TM. The use of disease modifying antirheumatic drugs in women with rheumatoid arthritis of childbearing age: a survey of practice patterns and pregnancy outcomes. *J Rheumatol* 2003;30:241-6.
2. Honein MA, Paulozzi LJ, Cragan JD, et al. Evaluation of selected characteristics of pregnancy drug registries. *Teratology* 1999;60:356-64.
3. ARAVA[™] Tablets (Aventis) (leflunomide). Physicians' desk reference. 57th ed. Montvale, NJ: Medical Economics Company, Inc.; 2003.
4. Shepard TH. Catalog of teratogenic agents. 10th ed. Baltimore, MD: The Johns Hopkins University Press; 2001.
5. Friedman JM, Polifka JE. Teratogenic effects of drugs. 2nd ed. Baltimore, MD: The Johns Hopkins University Press; 2000.
6. Kweder SL, Kennedy DL, Rodriguez E. Turning the wheels of change: FDA and pregnancy labeling. *The International Society for Pharmacoeconomics, Scribe Newsletter*, 2000;3:2-4,10.

Dr. Chakravarty, et al, reply

To the Editor:

We read with interest the letter by Dr. Uhl and colleagues in response to our article about DMARD exposure of pregnant women with rheumatoid arthritis (RA). We appreciate the interest and discussion raised by our study.

We agree with the points raised by the authors and acknowledge the limitations inherent in our study. The low response rate is likely, at least in part, to stem from hesitancy on the part of the physician to disclose information about patient outcomes, particularly when they include possible risks associated with prescribed medications. It is for this reason that we did not include questions about specific details surrounding pregnancy outcomes or require detailed review of maternal and infant medical records.

Unfortunately, there is currently a paucity of published information about pregnancy outcomes with *in utero* exposure to these DMARD. Despite over 2 decades of use of methotrexate in the treatment of RA, there have been less than 25 reported cases of pregnancy outcomes with gestational exposure to this agent. The aim of our study was to provide clinicians with additional information about pregnancy outcomes with exposure to certain DMARD while we await results from prospective studies. Our intent was to be descriptive rather than to determine accurate estimates of risks for adverse pregnancy outcomes. We are concerned about and caution against misinterpretations of the data to suggest relative risk or safety of any of these DMARD with respect to gestational exposure.

It is clear that prospectively collected data of pregnancy outcomes of gestational drug exposure are essential to accurately describe and estimate risks of adverse events. As described by Dr. Uhl, agencies such as the FDA and OTIS, as well as industry sponsors, have established such scientifically valid studies. We encourage all providers and patients to enroll in these registries once pregnancy with exposure to these medications is discovered. Unfortunately, the same hesitancy on the part of providers to report pregnancies to survey questionnaires may still exist when enrolling patients in pregnancy exposure registries. These include real or perceived legal, ethical, and confidentiality issues surrounding potential adverse outcomes to prescribed medications.

There is a need for increased awareness of such registries in order to enroll the maximum number of exposed pregnancies. We hope that our study and resulting discussions will encourage increased reporting to validated pregnancy registries. We applaud the FDA Pregnancy Labeling Task

Force's work to improve product labeling and to provide accurate information to providers using such medications when treating women of child-bearing potential.

ELIZA F. CHAKRAVARTY, MD; DEANNA SANCHEZ-YAMAMOTO, RNP; THOMAS M. BUSH, MD, Division of Immunology and Rheumatology, Department of Medicine, Stanford University School of Medicine, Suite 203, 1000 Welch Road, Palo Alto, California 94304, USA.



“Soft” Neurological Signs in Systemic Lupus Erythematosus

To the Editor:

I recently read the article by Denberg, *et al* on the relationship of subjective neuropsychiatric complaints to cognitive systemic lupus erythematosus (SLE). The authors conclude rightly that “minor” neuropsychiatric symptoms “may be sufficient to raise suspicion of subclinical nervous system involvement” even when standard objective tests are negative or equivocal.

This view certainly agrees with what I see clinically in my practice. However, the position put forth by the authors should not be limited only to SLE but also to any illness. I am referring in particular to fibromyalgia, where patients often complain of problems with memory, concentration, etc. While it is not practical to obtain brain SPECT scans and other sophisticated objective tests in most fibromyalgia patients, the credibility of such patients should not be challenged since their symptoms, while seeming to be “soft” to us, may be incredibly disturbing to the patient.

THOMAS J. ROMANO, MD, PhD, FACP, 205 North Fifth Street, Martins Ferry, Ohio 43935, USA.

REFERENCE

1. Denburg SD, Stewart KE, Hart LE, Denburg JA. How “soft” are soft neurological signs? The relationship of subjective neuropsychiatric complaints to cognitive function in systemic lupus erythematosus. *J Rheumatol* 2003; 30:1006-10.

Dr. Denburg replies

To the Editor:

Dr. Romano writes, “The authors conclude that minor neuropsychiatric symptoms “may be sufficient to raise suspicion of subclinical nervous system involvement” even when standard objective tests are negative or equivocal.”

While Dr. Romano's support is welcome, I would note that the conclusion that he cites, drawn from the article's Abstract, reads as follows: “minor NP symptoms and, in particular, a small subset of subjective complaints may be sufficient to raise suspicion of subclinical nervous system involvement in the absence of clinically evident NP-SLE.” The intent of the article was to validate the subjective symptoms against objective tests, in this case cognitive tests. Our conclusion was based on data showing that increased subjective complaints were significantly associated with reduced function on these standard objective cognitive tests.

It may be the case that subjective complaints that cannot be validated objectively should be taken seriously in the clinical setting; however, the point of the article was to validate these complaints against objective tests considered to reflect nervous system integrity.

SUSAN D. DENBURG, PhD, CPsych, Professor, Psychiatry and Behavioural Neurosciences, Faculty of Health Sciences, McMaster University, 1200 Main Street West, Hamilton, Ontario L8N 3Z5, Canada.

Validity of the Scleroderma Functional Assessment Questionnaire

To the Editor:

The Scleroderma Functional Assessment Questionnaire (SFAQ) is a relatively new self-report of functional ability designed specifically for persons with scleroderma¹. The authors state that the Health Assessment Questionnaire (HAQ)², which has traditionally been used to measure function, includes items that are not considered major problems in persons with scleroderma. The 11 item assessment comprises 9 questions regarding upper extremity function and 2 questions regarding muscle weakness. Items are scored on a 4 point scale from 0 (able to perform in a normal matter) to 3 (impossible to perform) and are summed to get a total score ranging from 0 to 33. Kappa scores for test-retest reliability ranged from 0.69 to 0.94, indicating good agreement. Validity was established by comparing subjects' and therapists' scores, which yielded kappa scores from 0.19 to 0.60, which constitutes only fair agreement.¹ However, the authors argue that there is no gold standard, as therapists' perceptions of disability are not more or less valid than subjects' self-reports. Thus, we compared the SFAQ with performance tests and other self-reports that have been shown to be reliable and valid in persons with scleroderma.

Thirty-four women who fulfilled the American College of Rheumatology criteria for systemic sclerosis (scleroderma)³ were enlisted as a convenience sample. Ages of participants ranged from 26 to 74 years (mean 53.8 yrs). Disease duration ranged from 3 months to 33 years (mean 10.6 yrs). There were 18 participants with limited scleroderma (lSSc) and 16 with diffuse scleroderma (dSSc). Thirty participants were right handed, while 4 were left handed.

Participants were administered these assessments in the following order: the SFAQ, the Hand Functional Disability Scale (HFDS)⁴, the Arthritis Hand Function Test (AHFT)⁵, the HAQ², the Keitel Functional Test (KFT)⁶, the Hand Mobility Test in Scleroderma (HAMIS)⁷, and skin scores⁸. The HFDS is a self-report consisting of 18 items regarding hand ability in 5 categories: kitchen, dressing, hygiene, office, and other. Subjects rate their ability from 0 (no difficulty) to 5 (impossible to do)⁴. The AHFT is an 11 item performance-based test that measures grip and pinch strength, dexterity, applied strength and applied dexterity⁵. The HAQ is a self-report that consists of 8 categories of daily living (dressing and grooming, arising, eating, walking, hygiene, reach, grip, and outside activity)². Items are scored from 0 (can perform) to 3 (cannot manage). The HAMIS is a 9 item hand function test developed specifically for persons with scleroderma to measure range of motion movements^{7,11}. The hand items from the KFT were used to measure joint motion⁶. The items are scored according to specific criteria, yielding a total score of 21 for each upper hand. Reliability and concurrent validity have been established for the HFDS (unpublished data), AHFT¹², HAQ^{9,10}, and the HAMIS^{7,11} and in persons with scleroderma. Skin thickness of the forearm, hand, and fingers was palpated and rated on a scale from 0 (normal) to 3 (severe skin thickness) to measure disease activity⁸.

Table 1 shows descriptive data for the 34 subjects on the SFAQ, HFDS, AHFT, HAQ, KFT, HAMIS, and skin scores. There was no significant difference in scores for any of the variables between the subtypes of scleroderma. Spearman's rho correlation coefficients were calculated to estimate the concurrent validity of the SFAQ with scores on the HFDS, AHFT,

Table 1. Means and standard deviations for the SFAQ, AHFT, HAQ, HFDS, HAMIS, KFT, and skin scores.

	dSSc		ISSc	
	Mean	SD	Mean	SD
SFAQ	7.0	4.5	6.2	6.7
HFDS (0–66)	24.3	13.8	20.3	21.1
AHFT				
Strength total, pounds	122.0	39.0	129.2	43.8
Dexterity total, s	51.1	11.2	49.8	11.0
Applied dexterity, s	161.5	52.6	145.5	54.4
Applied strength, mm	4905.1	1184.3	4815.3	1326.3
HAQ (0–3)	1.1	0.5	1.1	0.75
KFT (0–42)	17.6	12.4	13.6	9.3
HAMIS (0–54)	12.2	10.4	6.9	6.8
Skin score total (0–18)	25.2	15.1	19.8	13.9

AHFT: Arthritis Hand Function Test; HAMIS: Hand Mobility Test in Scleroderma; KFT: Keitel Functional Test; HAQ: Health Assessment Questionnaire; HFDS: Hand Function Disability Scale.

Table 2. Relationships between the SFAQ, performance measures of hand function, and other self-reports.

	Spearman r_s	p
HFDS	0.84	0.0001
AHFT		
Strength total	–0.50	0.01
Dexterity total	0.36	0.05
Applied dexterity	0.35	0.05
Applied strength	–0.62	0.0001
HAQ	0.76	0.0001
KFT	0.39	0.05
HAMIS	0.19	NS
Skin score total	0.15	NS

HAQ, KFT, HAMIS, and skin scores. Table 2 shows the SFAQ correlated significantly with the HFDS, AHFT, HAQ, and the KFT.

Our results support the use of a self-report questionnaire, the SFAQ, with persons who have scleroderma. The study provides further support for the concurrent validity of the SFAQ. The SFAQ correlated strongly with the other 2 self-report instruments, as would be expected. As well, 3 of the items on the SFAQ are also on the HAQ and HFDS. Scores also correlated with the AHFT; however, the correlations were weaker. No correlation was found between the SFAQ and skin scores, in agreement with other studies⁹. Yet skin scores have been the traditional outcome used in clinical trials and intervention studies¹³. Interestingly, while the SFAQ correlated with the KFT, the SFAQ did not correlate with the HAMIS. While both of these assessments measure similar joint motions, the KFT consists of 4 items measuring finger flexion, while the HAMIS has only one. However, the HAMIS additionally measures finger extension, and thumb and finger abduction. Perhaps these latter motions are not as important for actual hand function as finger flexion.

In conclusion, clinicians need reliable and valid measures to evaluate the effectiveness of interventions. The SFAQ is simple and quick to administer and has the potential to be useful as an outcome measure of hand function in clinical trials and other intervention studies.

JANET L. POOLE, PhD, OTR/L; LISA BROWER, MOT Student, Occupational Therapy Graduate Program, Department of Orthopaedics and Rehabilitation, 1 University of New Mexico, MSC09, Albuquerque, New Mexico 87131-001, USA.

REFERENCES

- Silman A, Akesson A, Newman J, et al. Assessment of functional ability in patients with scleroderma: A proposed new disability assessment instrument. *J Rheumatol* 1988;25:79-83.
- Fries JF, Spitz P, Kraines RG, Holman HR. Measurement of patient outcomes in arthritis. *Arthritis Rheum* 1980;23:137-45.
- LeRoy EC, Black C, Fleischmajer R, et al. Scleroderma (systemic sclerosis): classification, subsets and pathogenesis. *J Rheumatol* 1988;15:202-5.
- Duruoz MT, Poiraudou S, Fermanian J, et al. Development and validation of a rheumatoid hand functional disability scale that assesses functional handicap. *J Rheumatol* 1996;23:1167-72.
- Backman C, Mackie H. *Arthritis Hand Function Test manual*. Vancouver: University of British Columbia; 1997.
- Eberl DR, Fasching VV, Rahlfs V, Schleyer I, Wolf R. Repeatability and objectivity of various measurements in rheumatoid arthritis: A comparative study. *Arthritis Rheum* 1976;19:1278-86.
- Sandqvist G, Eklund M. Hand Mobility in Scleroderma (HAMIS) Test: The reliability of a novel hand function test. *Arthritis Care Res* 2000;13:369-74.
- Clements PJ, Lachenbruch PA, Seibold JR, Zee B, Steen VD, Brennan P. Skin thickness score in systemic sclerosis: An assessment of interobserver variability in 3 independent studies. *J Rheumatol* 1996;20:1892-6.
- Poole JL, Steen V. The use of the Health Assessment Questionnaire to determine physical disability in systemic sclerosis. *Arthritis Care Res* 1991;4:27-31.
- Poole JL, Williams CA, Bloch DA, Hollack B, Spitz P. Concurrent validity of the Health Assessment Questionnaire in scleroderma. *Arthritis Care Res* 1995;8:189-93.
- Sandqvist G, Eklund M. Validity of HAMIS: A test of hand mobility in scleroderma. *Arthritis Care Res* 2000;13:382-7.
- Brower LM, Poole JL. Reliability and validity of the Hand Function Disability scale in persons with systemic sclerosis (scleroderma). *Arthritis Care Res*
- Poole JL, Gallegos M, O'Linc S. Reliability and validity of the Arthritis Hand Function Test in adults with systemic sclerosis (scleroderma). *Arthritis Care Res* 2000;13:69-73.
- Clements PJ, Furst DE, Seibold JR, Lachenbruch PA. Controlled trials: Trial design issues. In: Clements PJ, Furst DE, editors. *Systemic sclerosis*. Baltimore: Williams & Wilkins; 1995:515-33.

Lack of Association Between ICAM-1 Gene Polymorphisms and Biopsy-Proven Erythema Nodosum

To the Editor:

Erythema nodosum (EN) is a self-limiting hypersensitivity reaction characterized by multiple and bilateral inflammatory nodules. It may be idiopathic or associated with drugs, several infections, and systemic diseases¹.

The intercellular adhesion molecule (ICAM-1) is a member of the immunoglobulin superfamily and plays an important role in endothelial cell-leukocyte interactions during inflammation². It contributes to the adhesion and transmigration of most leukocyte types including neutrophils, monocytes, lymphocytes, and natural killer cells through an interaction with β_2 integrins³. Expression of ICAM-1 on endothelium is induced by inflammatory mediators, which include lipopolysaccharide and cytokines.

Two coding region polymorphisms have been identified for ICAM-1 — Gly (G) or Arg (R) at codon 241 (exon 4) and Lys (K) or Glu (E) at codon 469 (exon 6)⁴. The functional significance of the 469 polymorphism is unknown, although it could potentially lead to alterations in binding and/or costimulatory activity of the ICAM-1 molecule. Similarly, the functional influence of the R/G polymorphism at codon 241 remains unclear, although

this region (in exon 4) is in the functionally important domain III of ICAM-1 that contains the binding site for the leukocyte integrin, Mac-1⁴.

ICAM-1 gene polymorphisms have been reported to be important candidate susceptibility factors for multifactorial diseases with an inflammatory component. Given the inflammatory effect of EN, we assessed the implication of ICAM-1 polymorphisms in this condition.

All patients (n = 101, ages 15–78 yrs) in our study were diagnosed with biopsy-proven EN in close collaboration between the rheumatology and dermatology divisions of the Hospital Xeral-Calde in Lugo, Spain. Thirty-six were diagnosed as having idiopathic EN and the remaining 65 as secondary EN (31 of them had EN in the setting of sarcoidosis). Controls (n = 129) were also from Lugo.

DNA from patients and controls was extracted from anticoagulated blood collected in EDTA using a commercial DNA extraction kit (Bioline™, London, UK).

Molecular analysis of ICAM-1: as reported⁵, amino acid polymorphisms, substitution of R for G at codon 241, and substitution of K for E at codon 469 were examined by polymerase chain reaction restriction fragment length polymorphism.

Associations between patient groups and controls and alleles or genotypes of ICAM-1 polymorphisms were estimated using odds ratios (OR) and 95% confidence intervals (CI). Levels of significance were determined by either chi-square or Fisher exact analysis. Statistical significance was defined as $p < 0.05$. Power calculation was performed for an unmatched case-control study and estimated relative risk using EpiInfo 2000, v. 1.1.2 software.

We found that in the control group, allele and genotype frequencies for ICAM-1 polymorphisms were in Hardy-Weinberg equilibrium; the chi-square data for the observed versus estimated expected genotype for ICAM-1 codon 241 and codon 469 in the control group were 1.9, $p = 0.3$, and 0.9, $p = 0.6$, respectively.

No differences between the whole group of patients with biopsy-proven EN and controls were observed for either polymorphism. This was also the result when patients with idiopathic and secondary EN were compared (Table 1). Similarly, no differences between patients with EN associated with sarcoidosis and the remaining group of EN secondary to other etiologies were found (Table 2). A small increase was observed in the frequency of R/G heterozygous for ICAM-1 (241 R/G) polymorphism in patients with EN associated with sarcoidosis compared to the controls (23% versus 13%)

($p = 0.2$, OR 1.9, 95% CI 0.7–5.1). Given the sample sizes and the allele frequencies of these polymorphisms, we can exclude with 80% certainty a genetic relative risk of 2.7 for ICAM-1 polymorphism at codon 241 and a genetic relative risk of 3.0 at codon 469 for sarcoidosis in Lugo.

ICAM-1 polymorphisms have been investigated in several diseases where diverse genetic and environmental factors are implicated in the development of an inflammatory response. Patients with ulcerative colitis who were antinuclear cytoplasmic antibody-negative had a significantly increased frequency of allele R241 compared with antibody-positive patients⁶. In patients with multiple sclerosis a significantly higher frequency of the exon 6 homozygote K469 genotype was found compared to controls⁷. This was independent of the association attributed to HLA-DR2⁷. In renal transplant recipients allograft failure was associated with R at codon 241, and a more rapid failure of the allograft in the presence of E at codon 469 was also found⁸. ICAM-1 gene polymorphisms have also been implicated in the pathogenesis of some systemic vasculitides such as in Behçet's disease and giant cell arteritis^{9,10}.

Our analysis constitutes the first attempt to assess the influence of ICAM-1 polymorphisms in a large series of biopsy-proven EN. Given the sample sizes and the allele frequencies of these polymorphisms, we can exclude a genetic relative risk of those ICAM-1 polymorphisms for EN in Northwest Spain. However, interpretation of these results could to some extent be limited because EN is a very heterogeneous entity.

MAHSA M. AMOLI, MD, PhD; WILLIAM E.R. OLLIER, PhD, FRCPath, Centre for Integrated Genomic Medical Research, School of Epidemiology and Health Sciences, University of Manchester, Stopford Building, Oxford Road, Manchester, M13 9PT, UK; MERCEDES LUEIRO, MD; MARIA L. FERNANDEZ, MD, Dermatology Division; CARLOS GARCIA-PORRUA, MD, PhD; MIGUEL A. GONZALEZ-GAY, MD, PhD; Rheumatology Division, Hospital Xeral-Calde, c) Dr. Ochoa s/n 27004, Lugo, Spain.

REFERENCES

- Gonzalez-Gay MA, Garcia-Porrúa C, Pujol RM, Salvarani C. Erythema nodosum: a clinical approach. *Clin Exp Rheumatol* 2001;19:365-8.
- Springer TA. Traffic signals for lymphocyte recirculation and leukocyte emigration: the multistep paradigm. *Cell* 1994;76:301-14.

Table 1. Allele and genotype frequencies of ICAM-1 gene polymorphisms in biopsy-proven erythema nodosum (EN) and controls*.

Gene	Controls	EN (total)	Idiopathic	Secondary
ICAM-1 (codon 241)	n = 129 (%)	n = 101 (%)	n = 36 (%)	n = 65 (%)
Genotype				
RR	2 (2)	0 (0)	0 (0)	0 (0)
RG	17 (13)	20 (20)	6 (17)	13 (20)
GG	110 (85)	81 (80)	30 (83)	52 (80)
Allele				
R	21 (8)	20 (10)	6 (8)	13 (10)
G	237 (92)	182 (90)	66 (92)	117 (90)
ICAM-1 (codon 469)	n = 117 (%)	n = 98 (%)	n = 34 (%)	n = 64 (%)
Genotype				
KK	28 (24)	24 (25)	9 (26.5)	15 (23)
KE	67 (57)	52 (53)	16 (47)	36 (56)
EE	22 (19)	22 (22)	9 (26.5)	13 (20)
Allele				
K	123 (53)	100 (50)	34 (50)	66 (52)
E	111 (47)	96 (50)	34 (50)	62 (48)

* No statistically significant differences were observed.

Table 2. Allele and genotype frequencies for ICAM-1 polymorphisms in patients with EN secondary to sarcoidosis and those due to other etiologies*.

Gene	Controls	EN Secondary to Sarcoidosis	EN Secondary to Other Etiologies
ICAM-1 (codon 241)	n = 129 (%)	n = 31 (%)	n = 34 (%)
Genotype			
RR	2 (2)	0 (0)	0 (0)
RG	17 (13) [†]	7 (23) [†]	6 (18)
GG	110 (85)	24 (77)	28 (82)
Allele			
R	21 (8)	7 (11)	6 (9)
G	237 (92)	55 (89)	62 (91)
ICAM-1 (codon 469)	n = 117 (%)	n = 31 (%)	n = 33 (%)
Genotype			
KK	28 (24)	9 (29)	6 (18)
KE	67 (57)	17 (55)	19 (58)
EE	22 (19)	5 (16)	8 (24)
Allele			
K	123 (53)	35 (56)	31 (47)
E	111 (47)	27 (44)	35 (53)

* No statistically significant differences were observed. [†] p = 0.2, OR 1.9, 95% CI 0.7–5.1.

3. Bevilacqua MP. Endothelial-leukocyte adhesion molecules. *Annu Rev Immunol* 1993;11:767-804.
4. Vora DK, Rosenbloom CL, Beaudet AL, Cottingham RW. Polymorphisms and linkage analysis for ICAM-1 and the selectin gene cluster. *Genomics* 1994;21:473-7.
5. Amoli MM, Shelley E, Matthey DL, et al. Lack of association between ICAM-1 gene polymorphisms and giant cell arteritis. *J Rheumatol* 2001;28:1600-4.
6. Yang H, Vora DK, Targan SR, Toyoda H, Beaudet AL, Rotter JJ. Intercellular adhesion molecule 1 gene associations with immunologic subsets of inflammatory bowel disease. *Gastroenterology* 1995;109:440-8.
7. Mycko MP, Kwinkowski M, Tronczynska E, Szymanska B, Selmaj KW. Multiple sclerosis: the increased frequency of the ICAM-1 exon 6 gene point mutation genetic type K469. *Ann Neurol* 1998;44:70-5.
8. McLaren AJ, Marshall SE, Haldar NA, et al. Adhesion molecule polymorphisms in chronic renal allograft failure. *Kidney Int* 1999;55:1977-82.
9. Verity DH, Vaughan RW, Kondeatis E, et al. Intercellular adhesion molecule-1 gene polymorphisms in Behcet's disease. *Eur J Immunogenet* 2000;27:73-6.
10. Salvarani C, Casali B, Boiardi L, et al. Intercellular adhesion molecule 1 gene polymorphisms in polymyalgia rheumatica/giant cell arteritis: association with disease risk and severity. *J Rheumatol* 2000;27:1215-21.

Correction

Asherson RA, Shoenfeld Y, Bosman C. An unusually complicated case of primary Sjögren's syndrome: development of transient "lupus-type" autoantibodies following silicone implant rejection [letter]. *J Rheumatol* 2004;31:196-7.

Signatures for the letter should include the third author, Peter Jacobs, BM, BCh, MD, PhD, The Department of Haematology and Bone Marrow Transplantation Unit, Constantiaberg Medi Clinic, Cape Town, South Africa. We regret the error.