Medically unexplained symptoms in patients referred to a specialist rheumatology service: prevalence and associations

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**Objectives.** To determine the prevalence of medically unexplained rheumatic symptoms amongst patients newly referred to a rheumatology out-patient service and to examine their relationship with pain, disability, socioeconomic factors and the presence of emotional disorders (anxiety, depression and panic).

**Methods.** A sample of newly referred consecutive patients to a hospital-based, regional rheumatology service was administered a questionnaire for assessment of emotional disorders, pain, health status and socioeconomic factors. Rheumatologists rated the degree to which patients’ symptoms were explained by organic disease (organicity rating).

**Results.** Two hundred and fifty-six patients were eligible and 203 (79%) participated. The sample included 69% females and mean age was 50 yr. Ninety-three (46%) had symptoms that were completely explained, 52 (26%) largely explained, 41 (20%) somewhat explained and 17 (8%) not at all explained by organic disease. Patients whose symptoms were of ‘low organicity’ (somewhat or not at all explained) were more likely to be female [relative risk (RR) 1.8, 95% confidence interval (CI) 1.0–3.1], younger (mean age 44 vs 52 yr, \( P < 0.001 \)) and to report more somatic symptoms (median 2 vs 1, \( P = 0.021 \)). On univariate analysis they were more likely to be experiencing financial hardship (RR 1.7, 95% CI 1.1–2.6) and work dissatisfaction (RR 1.6, 95% CI 1.0–2.4) and to live in rented housing (RR 1.8, 95% CI 1.2–2.8) or with dependent relatives (RR 1.6, 95% CI 1.0–2.5). Logistic regression showed that female gender and living in rented housing were the significant independent predictors of low organicity. Organicity ratings were not associated with pain severity, disability, physical and mental health status or the presence of emotional disorders.

**Conclusions.** Twenty-nine per cent of patients newly referred to rheumatology clinics had symptoms that were poorly explained by identifiable rheumatic disease. Having unexplained symptoms was associated with socioeconomic factors but not levels of pain, disability or emotional disorders.
Methods

Study setting, study subjects and sampling

The Lothian rheumatology out-patient service is provided by six consultants and five specialist registrars at five hospitals. A similar range of clinical problems is seen at each general clinic as referrals are distributed by clerical staff according to the availability of appointments. The study was conducted between September 2000 and April 2001 in seven out of a total of 21 general rheumatology clinics at two (one central and one peripheral) out of the five possible sites (Western General Hospital and Roodlands Hospital). The Western General Hospital, situated within Edinburgh, is the base of the Lothian rheumatology service and is the site of the majority of rheumatology clinics. Roodlands Hospital is located in a rural area and serves communities of different socioeconomic status. There are up to four different consultant rheumatology clinics held simultaneously on each weekday at the Western General Hospital and it would not have been possible for a single researcher to contact every new patient. The number of clinics studied, therefore, was limited to seven to ensure that the researcher was able to contact every new patient booked to attend one or two consultant clinics on each weekday. The selected clinics were chosen to provide a spread of clinics throughout the week and to maximize the use of different consultants’ clinics. All patients newly referred to the Lothian rheumatology service and allocated to selected clinics during the time period of the study were included.

Ethics approval was obtained from the Lothian Research Ethics Committee.

Consent procedure and assessment

Study subjects were sent written information about the study by post 1–2 weeks prior to their rheumatology clinic appointment. On the day of their clinic visit they were seen by the researcher and informed, written consent for participation was sought. Participating subjects were then asked to complete a self-report questionnaire on socioeconomic circumstances, emotional health and health status before their consultation.

At the end of the patient’s clinic consultation, the rheumatologist was asked to decide to what extent the patient’s symptoms were explained by organic disease and to indicate this using an ‘organicity rating’ with a four-point Likert scale: not at all explained; somewhat explained; largely explained; and completely explained. This has been shown to be a reliable measure [5, 10]. Rheumatologists were not aware of the results of the health status questionnaire.

Health status was assessed using the modified Health Assessment Questionnaire (HAQ) for disability [11] and the Medical Outcomes Study Short Form-12 (SF-12) for physical and mental health status [12]. The SF-12 is a shorter version of the SF-36 with comparable performance [13]. It was scored using published regression weights and scoring rules to produce T-scores for physical and mental health status. In T-score notation, the normal population mean is 50 with a standard deviation of 10. Lower scores indicate worse physical and mental health status. Pain was measured using a 100 mm visual analogue pain scale (0 = no pain, 100 = maximum pain).

Psychiatric diagnoses were made using the Patient Health Questionnaire (PHQ) [14], which is a self-administered version of the Primary Care Evaluation of Mental Disorders (PRIME-MD) [15]. This questionnaire provides diagnoses of major depressive disorder, other depressive disorder, panic disorder and anxiety based on the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition: Primary Care Version (DSM IV) [16]. The diagnosis of somatoform disorder was not used as this requires a clinical judgement to be made regarding the adequacy of a biological explanation for all physical symptoms that the patient has reported. The PHQ symptom checklist, however, was used to assess the number of somatic symptoms being experienced by patients. The alcohol and eating disorder sections of the PHQ were omitted.

Socioeconomic status was assessed using the Carstairs deprivation category, which is based on the postcode of residence and ranges from 1 (most affluent) to 7 (most deprived) [17]. It is derived from the level of male unemployment, overcrowding, car ownership and the distribution of social class within the population of the postcode area. In addition to this ecological factor, socioeconomic status was assessed using personal factors: housing tenure (owner-occupied or rented), household access to a car or van [18] and educational level (further education after finishing school). Subjective financial strain was also assessed by asking ‘How well would you say you are managing financially at the moment?’, with responses coded as living comfortably or doing all right, just about getting by, and finding it difficult [19]. Social circumstances were assessed by ascertaining whether patients lived alone or with dependent relatives, smoking status, and their level of satisfaction with their work status and home life. The latter was assessed by asking ‘How satisfied are you with your current job or work status (retired, student, seeking work, working at home)?’ and ‘How satisfied are you with your current home life?’, with the responses coded as very satisfied, satisfied, not particularly satisfied, dissatisfied, and severely dissatisfied.

Analysis

For the purposes of analysis, patients with symptoms rated as ‘not at all explained’ or ‘somewhat explained’ by organic disease were combined into one ‘low organicity’ group and patients with symptoms ‘largely explained’ or ‘completely explained’ by organic disease were amalgamated into one ‘high organicity’ group.

The PHQ was used to generate individual DSM IV diagnoses of depressive, panic and anxiety disorders, which were then combined to produce a single category of ‘emotional disorder’, which was used in further analysis. Although emotional health was also measured using the SF-12, this continuous measure was not used to categorize patients with regard to emotional disorders.

The relationship between organicity and categorical variables was examined using the chi-squared test. Continuous variables were examined using the t-test and the Mann–Whitney U-test when the data were not normally distributed. The relationships between socioeconomic variables and gender and organicity rating were examined using stepwise logistic regression. Variables that were significant on univariate analysis were entered into the logistic regression model with adjustment for age.

Results

Of the 279 patients booked to attend the designated clinics during the study period, 23 did not attend their appointments, leaving 256 eligible to participate. Of these, 44 did not give consent and a further nine were missed by the researcher on the day of their clinic visit. This left 203 patients who agreed to participate and who completed a questionnaire, which gives a participation rate of 79% of attenders and 73% of all those referred.
The mean age of the study patients was 50 yr (S.D. 15.0) with a range of 19–87 yr. One hundred and thirty-nine patients (68.5%) were female. Non-participants had a mean age of 48 yr and 68.4% were female. One hundred and fifty-eight patients (78%) attended the Western General Hospital and 45 (22%) attended Roodlands Hospital. One hundred and thirteen patients (56%) were seen by a consultant and 90 (44%) were seen by a specialist registrar.

The results of the organicity rating were as follows: 93 (46%) patients were considered to have symptoms completely explained by organic disease, 52 (26%) largely explained, 41 (20%) somewhat explained and 17 (8%) not at all explained by organic disease. The diagnoses given by the rheumatologists and their relation to the rheumatologists’ organicity ratings are shown in Table 1. Almost all patients diagnosed with an inflammatory arthritis or connective tissue disease and 81% of those patients with osteoarthritis were given a high organicity rating. In contrast, only 31% of the patients labelled with arthralgia, back pain or fibromyalgia and none of the three patients diagnosed with depression had a high organicity rating.

Sixty-eight patients (33.5%) were identified from the questionnaire as potentially having an emotional disorder. There was no association between the rheumatologists’ organicity rating and the presence of an emotional disorder. Patients with symptoms not well explained by organic disease were younger (P < 0.001), more likely to be female [relative risk (RR) 1.8, 95% confidence interval (CI) 1.0–3.1] and to report more somatic symptoms (P < 0.021) (Table 2). There was no association, however, between the rheumatologists’ organicity rating and the degree of pain, physical and mental health status or disability.

Table 3 shows the relationships between the rheumatologists’ organicity rating and socioeconomic factors. There was no association with the Carstairs deprivation category, car access, educational level, home satisfaction or living alone. There was, however, an association between unexplained symptoms and financial hardship (RR 1.7, 95% CI 1.1–2.6), living in rented housing (RR 1.8, 95% CI 1.2–2.8), living with dependent relatives (RR 1.6, 95% CI 1.0–2.5), smoking (RR 1.6, 95% CI 1.0–2.4) and dissatisfaction with work (RR 1.6, 95% CI 1.0–2.4).

TABLE 1. Relationship between rheumatologists’ primary diagnoses and organicity ratings

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Low organicity (not at all/somewhat explained) (n = 58)</th>
<th>High organicity (largely/completely explained) (n = 145)</th>
</tr>
</thead>
</table>
| Inflammatory arthritis
tissue diseasea (n = 69) | 2 (3%)                                                  | 67 (97%)                                               |
| Osteoarthritis (n = 43)                     | 8 (19%)                                                 | 35 (81%)                                               |
| Arthralgia/back pain
fibromyalgia (n = 54)                       | 37 (69%)                                                | 17 (31%)                                               |
| Depression (n = 3)                          | 3 (100%)                                                | 0                                                      |
| Othera (n = 34)                             | 8 (24%)                                                 | 26 (76%)                                               |

aIncludes rheumatoid arthritis, unspecified polyarthritis, psoriatic arthritis and spondylarthropathy.

bIncludes vasculitis, polymyalgia rheumatica and myositis.

cIncludes osteoporosis, regional problems, crystal arthritis and hypermobility.

TABLE 2. Relationship between rheumatologists’ organicity rating of patients’ symptoms and age, gender, disability, health status and emotional disorders

<table>
<thead>
<tr>
<th></th>
<th>Low organicity</th>
<th>High organicity</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>n (%)</td>
<td>58 (29%)</td>
<td>145 (71%)</td>
<td>&lt; 0.001a</td>
</tr>
<tr>
<td>Age (yr); mean (S.D.)</td>
<td>44 (13)</td>
<td>52 (15)</td>
<td></td>
</tr>
<tr>
<td>Female; n (%)</td>
<td>46 (79%)</td>
<td>93 (64%)</td>
<td>0.036b</td>
</tr>
<tr>
<td>Pain (VAS, mm); mean (S.D.)</td>
<td>61 (25)</td>
<td>55 (28)</td>
<td></td>
</tr>
<tr>
<td>HAQ: median (range)</td>
<td>0.688 (0–1.875)</td>
<td>0.625 (0–3.0)</td>
<td></td>
</tr>
<tr>
<td>SF-12 Physical: median (range)</td>
<td>35 (18–59)</td>
<td>38 (15–60)</td>
<td></td>
</tr>
<tr>
<td>SF-12 Mental: median (range)</td>
<td>43 (21–63)</td>
<td>48 (17–64)</td>
<td></td>
</tr>
<tr>
<td>No. of symptoms: median (range)</td>
<td>2 (0–7)</td>
<td>1 (0–11)</td>
<td>0.021c</td>
</tr>
<tr>
<td>Emotional disorder; n (%)</td>
<td>21 (36%)</td>
<td>47 (32%)</td>
<td>n.s.b</td>
</tr>
</tbody>
</table>

a t-test; b χ² test; c Mann–Whitney U-test.

TABLE 3. Relationship between rheumatologists’ organicity rating of patients’ symptoms and socioeconomic factors

<table>
<thead>
<tr>
<th></th>
<th>Low organicity (n = 58)</th>
<th>High organicity (n = 145)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smokers; n (%)</td>
<td>24 (41%)</td>
<td>39 (27%)</td>
<td>0.047</td>
</tr>
<tr>
<td>Housing; n (%) owner-occupiers</td>
<td>31 (53%)</td>
<td>107 (74%)</td>
<td>0.009</td>
</tr>
<tr>
<td>Having dependent relatives; n (%)</td>
<td>28 (48%)</td>
<td>47 (32%)</td>
<td>0.032</td>
</tr>
<tr>
<td>Carstairs deprivation category 5–7; n (%)</td>
<td>19 (33%)</td>
<td>31 (22%)</td>
<td>n.s.</td>
</tr>
<tr>
<td>Further education; n (%)</td>
<td>25 (43%)</td>
<td>71 (49%)</td>
<td>n.s.</td>
</tr>
<tr>
<td>Finance; n (%) comfortable</td>
<td>29 (50%)</td>
<td>98 (68%)</td>
<td>0.019</td>
</tr>
<tr>
<td>Work satisfaction; n (%) satisfied</td>
<td>34 (59%)</td>
<td>106 (73%)</td>
<td>0.044</td>
</tr>
<tr>
<td>Home satisfaction; n (%) satisfied</td>
<td>45 (78%)</td>
<td>121 (83%)</td>
<td>n.s.</td>
</tr>
</tbody>
</table>

a χ² test.
Socioeconomic variables associated with organicity rating which were significant on univariate analysis along with gender were analysed by logistic regression, adjusting for age. Living in rented housing (odds ratio 2.3, 95% CI 1.1–4.7; \( P = 0.02 \)) and female gender (odds ratio 3.4, 95% CI 1.5–7.7; \( P = 0.004 \)) were the significant independent predictors of low organicity among the variables examined in the model.

Discussion

Almost a third of patients newly referred to Lothian rheumatology clinics had symptoms that were not well explained by organic disease. These patients had levels of pain, disability and emotional disorders similar to those of patients whose symptoms were explained by rheumatological disease. There was, however, an association between unexplained symptoms and several socioeconomic variables.

When interpreting the results, the representativeness of the sample must be considered. Referrals are randomly distributed between general rheumatology clinics by clerical staff according to clinic templates and so study subjects were taken from the common pool of all rheumatology referrals to the Western General and Roodlands Hospitals. The clinics included in the study were chosen to maximize the number of different consultants’ clinics and to provide a spread throughout the week while allowing a feasible number of patients for the researcher to contact in the allocated time. The participating clinics were representative of the service as a whole. Our participation rate of 79% of attenders was adequate, and although there may have been some potential for non-response bias it is reassuring that non-participating patients had similar demographic characteristics to the study patients.

The organicity rating has been used widely, has been shown to be reliable [5, 10] and has been validated in neurology patients [5]. The rating, by its nature, is subjective and the organicity categories are open to individual interpretation, but it is a valid measure of assessing doctors’ opinion as to the extent to which a patient’s symptoms are explained by organic disease. The organicity rating in our study was not reviewed in the light of future investigation or after a time interval to ensure that organic disease had not developed subsequently. Whether patients’ ‘unexplained’ symptoms will remain unexplained in the long term can only be answered with more prolonged follow-up. However, in another study, no cases of organic disease were found after review at 6 months in neurology patients given a low organicity rating [5].

Medically unexplained symptoms are common in rheumatology clinics, and others have found that this is also the case in other hospital specialties’ out-patient clinics [3, 4]. Nimnuan et al. [4] conducted a cross-sectional study of medically unexplained symptoms in new attenders across a variety of specialties at two general hospitals in London and found a prevalence of 52% (41–62%). The prevalence in rheumatology clinics was 45%. Their higher prevalence figure relative to our study probably reflects a smaller sample size (\( n = 91 \)) and a different method of assessment for unexplained symptoms. This involved case-note review for physicians’ diagnoses rather than directly asking the physicians for their opinion on the extent to which the patients’ symptoms were explained by organic disease. Carson et al. [5], who used an organicity rating, as in our study, found that the prevalence of unexplained symptoms among new attenders at general neurological outpatient clinics in Edinburgh was very similar, at 30%. The association between medically unexplained symptoms and the reporting of multiple somatic symptoms shown in our study has been found by others [5, 20] but not by all [4]. Similarly, our finding that patients with unexplained symptoms reported just as much impairment of physical function and disability as patients whose symptoms were explained has been shown previously [5, 20], but not in the study by Nimnuan et al. [4]. Our patients with medically unexplained symptoms were younger and more likely to be female, which has also been observed by others [4, 20] but not in the Edinburgh neurology patients [5]. This may reflect the fact that in older rheumatology patients it is easier to attribute symptoms, correctly or not, to incidental findings such as osteoarthritis.

As in the study by Nimnuan et al. [4], we did not find an association between medically unexplained symptoms and emotional disorders, which is in contrast to other findings [5–8]. Similarly, there was no significant difference in the median SF-12 scores for mental health status in the high and low organicity groups. This may relate to the use in both our study and that by Nimnuan et al. of self-report questionnaires to detect psychiatric morbidity rather than an interview, although good agreement has been found between PHQ diagnoses and those made at interview by mental health professionals [14]. Another paper by us describes the prevalence of emotional disorders in this cohort of patients and shows that there is no relationship with broad rheumatological diagnosis (N. L. Maiden et al., in preparation). Patients with symptoms of high and low organicity and patients with systemic, inflammatory disease as well as those with non-systemic, non-inflammatory disease are all just as likely to have an emotional disorder.

The cause of unexplained symptoms is likely to be multifactorial but our study would suggest that anxiety and depression are not always the cause or consequence. There is a suggestion from our study that socioeconomic factors, such as financial hardship and housing tenure, and social stressors, such as work dissatisfaction and living with dependent relatives, may be involved. However, given the multiple socioeconomic variables investigated in our study, these associations may have arisen by chance. Smith et al. [20] found an association between somatization disorder and low socioeconomic status but, conversely, an association between medically unexplained symptoms and higher educational attainment has also been shown [4].
Symptoms that are not well explained by organic (rheumatological or psychiatric) disease are common in rheumatology clinics and are associated with levels of pain and disability similar to those that occur in recognized rheumatological disorders. Patients with unexplained symptoms are likely to be discharged back to their general practitioners and, given that these patients report multiple somatic symptoms and are frequent attenders [9], they are likely to be referred to other specialties. At present these patients are managed poorly within the NHS, with the consequence that their distress is unresolved and they continue to consume health-care resources.

In conclusion, 29% of new referrals to rheumatology clinics had symptoms that were poorly explained by identifiable rheumatic disease and there was an association between unexplained symptoms and socioeconomic factors. The levels of pain and disability amongst these patients and the proportion with emotional disorders were similar to those seen in patients with a recognizable rheumatic disorder. Further research into the management and health outcome of patients with unexplained symptoms is required [21, 22].

Acknowledgements

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References