LIFE EVENTS AND DISABILITY IN RHEUMATOID ARTHRITIS: A EUROPEAN COHORT

F. LEYMARIE, D. JOLLY, R. SANDERMAN,† S. BRIANÇON,* A.-C. MARCHAND, F. GUILLEMIN,* J.-P. ESCHARD, T. SUURMEIJER,‡ P. POITRINAL, F. BLANCHARD and W. VAN DEN HEUVEL§

University of Reims, *University of Nancy, †Department of Health Sciences, ‡Department of Sociology and Department of Health Sciences and §Department of Sociology, Department of Health Sciences and Northern Center for Health Care Research, University of Groningen, The Netherlands

SUMMARY

The objective was to study the relationship between life events (LE) and the clinical status of patients suffering from recently diagnosed rheumatoid arthritis (RA) in a 2 yr follow-up. As part of a multicentre European cohort study, 370 French and Dutch patients were questioned three times at 1 yr intervals about LE which had occurred in the previous year. Three criteria were used to quantify the degree of disease activity (Ritchie’s index), the level of functional disability [Health Assessment Questionnaire (HAQ)] and perceived health [Overall Evaluation of Health (OEH)]. Total LE and desirable LE showed a weak negative correlation with the HAQ scores. On the other hand, death-related LE did not seem to modify patient status. The higher the number of health-associated LE, the greater the deterioration in HAQ and OEH scores. The results indicate that LE do not affect the course of early RA in a spectacular manner.

KEY WORDS: Life events, Disability, Rheumatoid arthritis.

Do life events (LE) have an impact on people’s health? If so, how, and which parameters are affected? According to the World Health Organization definition [1]: ‘Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity’. It is accepted nowadays that events of daily life, and especially social aspects of well-being, influence health. The question arises as to whether or not these phenomena may also influence morbidity and/or mortality.

LE are occurrences which entail a certain degree of surprise. The event can be a death, a marriage, a birth, a change of job or retirement, all of which may affect the individual or her/his family or friends. Individuals can cope with LE, not with trauma. Whatever its importance, a LE becomes a landmark in the person’s life.

The first attempt to unravel the relationship between LE and health was made by the British at the beginning of the century [2]. The idea was taken up in France only about 20 yr ago [3]. Measuring the health impact of LE has met with numerous methodological difficulties, including the design of reliable and valid tools. At the outset, investigators were above all eager to develop a stricter approach. Little by little, the methodology gained in accuracy and studies, sometimes reaching contradictory conclusions, began to be published: in the domain of mental health, it has been pointed out that stressful LE could play a role in the triggering of depression or attempted suicide [4–6]. The occurrence of LE is more frequent during the 6 months preceding suicide attempts, reaching a ‘peak’ during the month previous to it. Similarly, a relationship has been demonstrated between the frequency of stressful LE and acute episodes of schizophrenia (triggering of the illness or relapse) [7]. Stressful LE are also thought to be risk factors in diseases like myocardial infarction [8] and for aggravation of chronic diseases such as high blood pressure [9, 10]. In rheumatoid arthritis (RA), studies have revealed that LE could be triggering factors of disease onset [11] and flare-ups [12], and could influence its degree of severity. On the other hand, a recent study has not corroborated the effect of LE on cardiovascular mortality rate [13]. Thus, LE seem to be able to modify the course of chronic diseases.

The aim of our study was to investigate the relationship between LE and disability in patients suffering from RA. It was carried out within the framework of EURIDISS (European Research on Incapacitating Diseases and Social Support) which coordinated this prospective multicentre study in seven countries (Belgium, France, The Netherlands, Ireland, Italy, Norway and Sweden). This cohort study was designed to elucidate the factors, in particular those of social origin, which may play a role in disability and quality of life [14]. RA is characterized by an inflammation of the synovial membrane of joints. Its pattern is cyclic with periodic flare-ups interspaced by partial remissions, and it leads to more or less severe functional disability [15]. We studied the impact of LE by measuring changes in clinical symptoms, functional

Submitted 26 November 1996; revised version accepted 2 April 1997.

Correspondence to: Florence Leymarie, Service d’Épidémiologie et de Santé Publique, Hôpital Calmette, CHRU de Lille, 59 037 Lille Cedex, France.

© 1997 British Society for Rheumatology
disability and quality of life in a sample of 370 French and Dutch patients suffering from recently diagnosed RA (< 5 yr) in a 2 yr follow-up.

METHODS

Sampling
The EURIDISS cohort was constituted at the beginning of 1991. In Lorraine, France, in-patients and out-patients were identified from several sources: rheumatology departments of university hospitals, private rheumatologists and general practitioners contacted either personally or by medical publications, and several local and regional media announcements calling on patients to contact their physician or the study centre. In Groningen and Drenthe, The Netherlands, in-patients and out-patients were listed from rheumatology practices or departments in five hospitals (one teaching and four community).

Criteria for patient selection
The criteria for inclusion were: resident in the study areas, aged 20–70 yr, diagnosis of arthritis (1987 ARA criteria, [16]) and disease duration < 5 yr. Criteria for exclusion were: RA stage IV or association with a necrotic vascular disease, presence of another chronic, disabling, progressive disease or a handicap prior to RA.

Collection of data
All the patients were followed up for 2 yr with three assessments: at entry into the study (T1), 1 yr after T1 (T2), 2 yr after T1 (T3). Questionnaires were identical in T1, T2 and T3, and were adaptations into Dutch and French from the original English. They were divided into two parts. The first part was filled out by the health care worker (social, demographic and clinical data). The second was to be filled out by the patient him/herself (functional capacity, quality of life, life events).

Study variables
These were as follows:

Socio-demographic: including country of residence, sex, age and occupational status.

Clinical and biological: they comprised the duration of the disease, number of skin nodules, erythrocyte sedimentation rate (ESR) and Ritchie’s index. [Ritchie’s index explores 26 joints. For each one, the patient evaluates the degree of pain felt when the joint is moved passively or pressed; the scale is from 0 to 3 (0: no pain; 1: pain; 2: pain accompanied by grimace; 3: pain, grimace and physical withdrawal). The sum of these 26 scores constitutes Ritchie’s index (score 0–78).] The latter was used to rate the degree of disease activity.

Treatment: Non-steroidal anti-inflammatory drugs (NSAIDs), steroids, remittive agents, intra-articular injection, or surgery.

Functional disability: this was evaluated by the Health Assessment Questionnaire (HAQ) [17], which has been demonstrated to be relevant for articular diseases and in particular for RA. [The HAQ is composed of 20 questions and explores the level of difficulty in performing eight daily routine activities: dressing and grooming, arising, eating, walking, reaching, grasping and others. Each question has a score from 0 to 3 (0: no difficulty; 1: some difficulty; 2: much difficulty; 3: unable to perform). The score for overall disability ranges from 0 (normal functional ability) to 3 (total disability).] This questionnaire has been fully adapted and validated in French [18] and Dutch [19].

Perceived health: this was evaluated by a 100 mm visual analogue scale known as the Overall Evaluation of Health (OEH). [The extreme left of the scale corresponds to the score ‘very bad’, the extreme right to ‘excellent’. The score is obtained by measuring the distance in millimetres which separates the extremity ‘very bad’ and the mark made by the patient; it ranges from 0 to 100.]

Life events
A list of 25 events was given to the patients and they were asked to mark those which had occurred during the year preceding the interview. The events concerned family life (marriage, divorce, pregnancy, etc.), professional life (retirement, exams, loss or change of job, etc.), social life (dealings with the police or justice, burglaries, etc.) and health (disease or surgery). For each LE, the patient had to indicate the person concerned (himself or another person inside or outside the family), how desirable the event had been perceived to be [Likert scale ranging from 1 (completely undesirable) to 6 (completely desirable)].

Statistical analysis
The socio-demographic and clinical variables were described for France and The Netherlands (mean with 95% confidence interval, percentages of the T1 values). Functional disability as well as LE were described in the course of each of the three assessments in the study. Six LE variables were derived from the data collected: number of LE per patient, number of desirable (score > 3 on the Likert scale) and undesirable (score ≤ 3 on the Likert scale) LE per patient, number of health-associated LE (disease and surgery) per patient, number of deaths, separations and/or divorces in the patient’s family and/or among significant social relations. Percentages were compared using the Pearson χ², means were compared using Student’s t-test.

Patients were classified into three groups—stable, improved or deteriorated—according to variations between T2 and T1 and T3 and T1 observed in scores derived from Ritchie’s index, the HAQ and the OEH. A patient was considered as stable when the variation of the score was < 30% of the T1 value. For Ritchie’s index and the HAQ, a patient was considered to have improved when the score decrease was > 30%, and to have deteriorated when the score increase was > 30%. Since a high value on the OEH scale indicates better status, values for the definition of improvement and aggravation were reversed for
this variable as compared to Ritchie’s index and HAQ where a high score indicates worse status.

In order to take into account the data from the three assessments, we decided to use the analysis of variance and covariance (Ancova) with repeated measures [20] which enables exploration of co-variations of variables in the course of time. For each of the three dependent variables (Ritchie’s index, HAQ, OEH), six Ancova analyses were performed, each using one of the six LE variables as an independent variable and adjusting for country of residence, sex and age of patients, and time span between each interview. Thus, for a given subject, this analysis provided a regression coefficient adjusted for the dependent variable and the number of LE occurring between assessments, from T1 to T2 and from T2 to T3. As the absence of interaction between country of residence and LE was confirmed, this variable was not entered into the models presented.

Description variables for RA patients such as ESR, number of nodules, treatment in use, and occupational status, were not introduced into the models since they are not related to the independent variables and thus are not liable to introduce a confounding effect.

Analyses were performed with BMDP (Bio Medical Data Package) software. A significance threshold of 0.10 was chosen.

RESULTS

At T1 stage, the study included 408 patients. Among them, 370 (269 Dutch and 101 French) patients were followed through from T1 to T3 (90.7%). The drop-out rate was about the same between T1 and T2 (4.1%), and between T2 and T3 (5.2%). In the group ‘lost to follow-up’, the available variables at T1 (age, sex, Ritchie’s index, HAQ score, OEH score, etc.) did not differ from those of the patients followed through.

Sample description

The cohort included more women than men (66.5% vs 33.5%) irrespective of the country of residence. Close to two-thirds of the patients were 50–70 yr old. The mean age was 54.2 [95% confidence interval (CI95) = [53.0–55.4]]. Most of the patients were not working, especially in The Netherlands (P < 0.001) (Table I). At T1, patients were under medical treatment as often in France and in The Netherlands, but steroids were more often used in

<table>
<thead>
<tr>
<th>Country of residence</th>
<th>France</th>
<th>The Netherlands</th>
<th>P</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>n (%)</td>
<td>Mean</td>
<td>n (%)</td>
</tr>
<tr>
<td>[CI95]*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>France</td>
<td>101</td>
<td>(27.3)</td>
<td>269</td>
<td>(72.7)</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>70</td>
<td>(69.3)</td>
<td>176</td>
<td>(65.4)</td>
</tr>
<tr>
<td>Male</td>
<td>31</td>
<td>(30.7)</td>
<td>93</td>
<td>(34.6)</td>
</tr>
<tr>
<td>Age (yr)</td>
<td>54.9</td>
<td>[52.7–57.1]</td>
<td>53.9</td>
<td>[52.5–55.3]</td>
</tr>
<tr>
<td>Occupation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>At home</td>
<td>17</td>
<td>(16.8)</td>
<td>109</td>
<td>(40.5)</td>
</tr>
<tr>
<td>Unemployed</td>
<td>2</td>
<td>(2.0)</td>
<td>5</td>
<td>(1.8)</td>
</tr>
<tr>
<td>Invalidity</td>
<td>7</td>
<td>(7.0)</td>
<td>58</td>
<td>(21.6)</td>
</tr>
<tr>
<td>Retired</td>
<td>34</td>
<td>(33.6)</td>
<td>33</td>
<td>(12.3)</td>
</tr>
<tr>
<td>At work</td>
<td>41</td>
<td>(40.6)</td>
<td>64</td>
<td>(23.8)</td>
</tr>
</tbody>
</table>

*95% confidence interval. P, degree of significance for comparison between France and The Netherlands.
France (21.8% vs 7.1%, \( P < 0.0001 \)), while remittive agents were more often used in The Netherlands (68.8% vs 51.5%, \( P < 0.002 \)) (Table II). At T1, mean disease duration was 2.1 yr (CI95 = [1.9–2.2]), and it was significantly shorter in The Netherlands: 1.9 yr (CI95 = [1.7–2.0]) than in France: 2.6 yr (CI95 = [2.3–2.8]) (\( P < 0.001 \)).

Ritchie’s index mean values evolved slightly, but significantly (\( P < 0.002 \)), as a negative U-shaped curve. The mean HAQ value indicated a relatively high level of impairment and remained remarkably stable in the course of time. OEH mean values evolved slightly, but significantly (\( P < 0.002 \)), as a positive U-shaped curve (Table III). The patients were distributed almost equally among the ‘stable’, ‘deteriorated’ and ‘improved’ groups for Ritchie’s index and for the HAQ score. On the other hand, OEH scores were ‘stable’ or ‘improved’ in >85% of cases (Table IV). A shift from one group to another between T1–T2 and T2–T3 was evidenced in 44% of the patients for Ritchie’s index, 38.4% for HAQ scores and 36% for OEH scores.

At T1, 186 LE were recorded. The mean number of LE among patients who declared at least one event was 1.6, and this remained constant over time. The proportion of LE looked upon by patients as desirable remained constant throughout the study (44.8% at T1, 57.6% at T2 and 52.3% at T3). Death, disease and surgery were the three most often cited LE at the three interviews. Disease and surgery experienced by the patient himself were classified together as health-associated LE; they represented more than 2/3 of the total number of recorded events. More than a quarter of the patients experienced a death in their family or among significant social relations in each of the time intervals. The items ‘separation’ and ‘divorce’ experienced by the patient, her/his family or significant social relations were also classified together; they were relatively rare (Table V).

Ancova

Results were not the same from one LE variable to another. As far as the relationship LE/variation of Ritchie’s index is concerned, only the variable ‘number of desirable LE’ seemed to be positively corre-

\[ \text{TABLE III} \]

Evolution of three dependent variables across time

<table>
<thead>
<tr>
<th></th>
<th>T1</th>
<th>T2</th>
<th>T3</th>
<th>( P )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>[CI95]*</td>
<td>[CI95]*</td>
<td>[CI95]*</td>
<td></td>
</tr>
<tr>
<td>RI</td>
<td>11.10</td>
<td>10.80</td>
<td>12.20</td>
<td>&lt;0.002</td>
</tr>
<tr>
<td>[10.12–12.10]</td>
<td>[9.74–11.84]</td>
<td>[11.05–13.36]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HAQ\†</td>
<td>1.06</td>
<td>1.05</td>
<td>1.06</td>
<td>NS</td>
</tr>
<tr>
<td>[0.98–1.14]</td>
<td>[0.97–1.13]</td>
<td>[0.98–1.14]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OEH\‡</td>
<td>58.10</td>
<td>62.20</td>
<td>60.10</td>
<td>&lt;0.002</td>
</tr>
<tr>
<td>[55.92–60.20]</td>
<td>[60.16–64.22]</td>
<td>[57.90–62.34]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\( P \), degree of significance for the test of evolution of the variable over time in an ANOVA with repeated measures.
\*95% confidence interval.
\†Health Assessment Questionnaire.
\‡Overall Evaluation of Health.

\[ \text{TABLE IV} \]

Patients with LE at the three times of the study

<table>
<thead>
<tr>
<th></th>
<th>T1–T2 n (%)</th>
<th>T1–T3 n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RI</td>
<td>144 (38.9)</td>
<td>123 (33.2)</td>
</tr>
<tr>
<td>Stability**</td>
<td>111 (30.0)</td>
<td>92 (24.9)</td>
</tr>
<tr>
<td>Aggravation***</td>
<td>115 (31.1)</td>
<td>155 (41.9)</td>
</tr>
<tr>
<td>HAQ\†</td>
<td>116 (31.3)</td>
<td>124 (33.5)</td>
</tr>
<tr>
<td>Stability**</td>
<td>163 (44.1)</td>
<td>145 (39.2)</td>
</tr>
<tr>
<td>Aggravation***</td>
<td>91 (24.6)</td>
<td>101 (27.3)</td>
</tr>
<tr>
<td>OEH\‡</td>
<td>106 (28.6)</td>
<td>105 (28.4)</td>
</tr>
<tr>
<td>Stability**</td>
<td>227 (61.4)</td>
<td>213 (57.6)</td>
</tr>
<tr>
<td>Aggravation*</td>
<td>37 (10.0)</td>
<td>52 (14.1)</td>
</tr>
</tbody>
</table>

\* >30% decrease of score.
** >30% variation of score.
*** >30% increase of score.
\†Health Assessment Questionnaire.
\‡Overall Evaluation of Health.

\[ \text{TABLE V} \]

Patients with LE at the three times of the study

<table>
<thead>
<tr>
<th></th>
<th>T1 %</th>
<th>T2 %</th>
<th>T3 %</th>
<th>( P )</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of patients who experienced one or more:</td>
<td></td>
<td></td>
<td></td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>LE*</td>
<td>31.3</td>
<td>21.9</td>
<td>19.5</td>
<td></td>
</tr>
<tr>
<td>Desirable LE*</td>
<td>17.8</td>
<td>15.4</td>
<td>11.3</td>
<td>0.04</td>
</tr>
<tr>
<td>Death\†</td>
<td>27.5</td>
<td>37.2</td>
<td>29.8</td>
<td>0.06</td>
</tr>
<tr>
<td>Health-associated LE*</td>
<td>35.6</td>
<td>22.7</td>
<td>23.2</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

\*LE concerning the patient himself.
\†LE occurring in patient’s family or significant social relations.
\‡LE concerning the patient or occurring in her/his family or significant social relations.

\( P \), degree of significance.
we found a positive relationship between the HAQ score and the number of health-associated LE ($P = 0.06$); thus, the degree of functional disability increased with the number of health-related LE. Perceived health scores decreased when the number of health-associated LE increased ($P = 0.04$). This was the only significant relationship demonstrated between OEH scores and LE (Table VI).

### DISCUSSION

This study involving early RA patients followed up for 2 yr has demonstrated only a few weak correlations between LE experienced and variations in patient status indicators. These results must be envisaged from a methodological and medical point of view.

The patients were questioned about LE which had occurred during the year preceding the interview. Their memory may not always have been accurate. Ulenhuth et al. [21] have observed a 5% monthly decrease in numbers of events recalled by a sample of 735 patients over a period of 18 months. Horowitz et al. [22], after having conducted two interviews at a 6 week interval, noted that only $\sim 60\%$ of LE indicated the first time were recalled at the second interview. This varied from 20 to 100% depending on the patients. According to Horowitz, this is attributable to forgetfulness, dissimulation and difficulty in understanding the questions. A patient’s pathological status may also condition the retrospective search for a LE. Andrews and Tennant [23] have found that sick people have a tendency to cite more events than people in good health, partially in order to explain their state of health. On the other hand, one could consider that a forgotten event is not stressful and therefore is not a LE. Brown et al. [24] have proposed a method for recording LE which compensates for these drawbacks: it consists of trying to situate the date of the event accurately with the patient and then to verify the accuracy with his/her family or significant social relations. However, this is not an easy methodology and it can only be applied to important and precise events.

Important choices were made in our study: we considered only the events most frequently mentioned by the patients (death, disease, surgery) or in the literature (death, divorce). We explicitly separated LE experienced by the patient her/himself and those experienced by her/his family or significant social relations. Life events were weighted by their desirability as declared by the patient him/herself. This was thought to be better than an a priori weighting system as previously used, in particular by Holmes and Rahe [25, 26]. We used both the total sum of the number of LE and the number of specific LE.

Most of the published studies are cross-sectional and thus correlations found are not really convincing. Our longitudinal design provided better consistency and the Ancova methodology chosen, with repeated measures, is the most appropriate model for this type of data, since it takes the three assessments into account, and allows for adjustment for potential confounding factors. Nevertheless, multiple analyses could have led to wrong conclusions: a threshold of $z$ equal to 0.10 was adopted. Some of the few correlations demonstrated could have occurred by chance alone. This reinforces our conclusions that LE probably play only a small role in the changes of early RA, if any at all.

Recruitment of Dutch patients was higher than that of French patients (ratio 3/1). Even if these two countries are geographically and socially close to each other, we could imagine that cultural differences could influence the way LE are interpreted. This could, for example, be related to differences in occupational status from one country to another, and in that case could suggest a possible interaction between LE and country of residence. However, no such interaction was evidenced, and since adjustment was made for country of living, this confounding bias was avoided.

Measurements of alterations in clinical status are quite difficult in RA. Few long-term studies have been carried out in this area. Hawley and Wolfe [27] followed a cohort for 10 yr, collecting clinical data on a regular basis and recording the patients’ overall

---

**TABLE VI**

Relationship between the variation over time of the state of health estimated by Ritchie’s index, HAQ and OEH, and the number of life events (LE) occurring between T1 and T2, T2 and T3

<table>
<thead>
<tr>
<th></th>
<th>Ritchie’s index</th>
<th>HAQ</th>
<th>OEH</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$P$</td>
<td>$\beta$</td>
<td>$P$</td>
</tr>
<tr>
<td>LE*</td>
<td>0.16</td>
<td>0.40</td>
<td>0.09</td>
</tr>
<tr>
<td>Desirable LE*</td>
<td>0.08</td>
<td>0.84</td>
<td>0.04</td>
</tr>
<tr>
<td>Undesirable LE*</td>
<td>0.87</td>
<td>-0.07</td>
<td>0.96</td>
</tr>
<tr>
<td>Death†</td>
<td>0.34</td>
<td>0.41</td>
<td>0.74</td>
</tr>
<tr>
<td>Health-associated LE*</td>
<td>0.43</td>
<td>0.39</td>
<td>0.03</td>
</tr>
<tr>
<td>Separation and/or divorce‡</td>
<td>0.20</td>
<td>-1.15</td>
<td>0.02</td>
</tr>
</tbody>
</table>

*LE concerning the patient himself.
†LE occurring in patient’s family or significant social relations.
‡LE concerning the patient or occurring in her/his family or significant social relations.
§Health Assessment Questionnaire.
*Overall Evaluation of Health.
$P$, degree of significance; $\beta$, regression coefficient adjusted for country of living, sex, age and delay between each interview.
estimation of the severity of their RA as well as their HAQ scores. The clinical variable and overall patient estimation indicated a short-term improvement (2 yr), followed by stabilization, whereas the HAQ scores showed a linear deterioration of functional capacity over 10 yr. Our results are quite consistent with Hawley’s findings. We found a relatively higher HAQ score at T1 (1.06/3) for a group of patients who had been suffering from the disease for <5 yr as compared to studies with longer disease duration: Fries et al. [17] obtained an HAQ score of 0.8 in a group of 331 patients (duration of disease 12 yr); Wolfe et al. [28] reported a HAQ score of 0.99 in 400 patients (duration of disease 9.5 yr), Bombardier et al. [29] found a mean score of 1.4 in a group of 154 patients (duration of disease 8.3 yr), and finally Leigh et al. [30] found a HAQ score of 1.06 in a group of 79 women (duration of disease <10 yr). Taking into account these scores and the fact that our patients were volunteers, one could expect a selection of severe cases in the constitution of the EURIDISS cohort. However, this bias in representativeness should have been avoided since patients were recruited not only from hospitals, but also via treating physicians and public press announcement. Further to this, disease duration covers the period from the date of definite diagnosis (according to ARA criteria) to the date of study entry, but for many patients the clinical diagnosis had been established prior to the definite diagnosis and the first signs of the disease had occurred even earlier. Therefore, the disease duration is probably minimized in the EURIDISS cohort when compared to that found in the literature (where it is established from the onset of the first symptoms). Also, some authors claimed that the greatest disability appears during the first 5yr and that thereafter only minimal changes occur [31]. This could explain the levels of disability encountered by the EURIDISS study.

When studying the LE–health status relationship, it is difficult to take into account the acute episodes occurring in the progress of RA. They can give rise to a variability in measurements which confounds the interpretation of the tests. Indeed, the number of LE and the number of desirable LE seemed to be weakly associated with the variations in the HAQ score. The negative correlation between LE and HAQ scores can be explained. The higher the number of LE or desirable LE, the lower is the HAQ score; this may be due to the fact that the patient pays relatively less attention to the symptoms when faced with a large number of LE. Our results highlight the discrepancies in available data in the literature: an 8 month follow-up of a cohort of 75 persons with RA [32] could not demonstrate significant differences on clinical and psychological data between the group of patients who experienced ‘at least one severe LE’ and the group of patients ‘having experienced no event’. Conversely, the comparison of two groups of women suffering from RA (one having experienced stressful LE, the other none) indicated a greater percentage of inflammatory episodes of the disease in the first group [11]. Likewise, when comparing ‘active’ or ‘inactive’ RA, a higher number of LE in the preceding years has been found for the group having the ‘active’ form of the disease. On the other hand, we did not find a clear correlation between the occurrence of a death, separation and/or divorce and the status of the patients. However, it has already been reported in several previous studies on persons suffering from RA or another chronic pathology [10, 33] that a negative health impact of LE relating to loss of someone close could exist. The number of health-associated LE varied in the same way as the HAQ and OEH scores.

The correlations observed between LE and clinical course are weak, but it does not mean that such a correlation does not exist. It could have been missed due to the infrequent measurement of the disease variables (only once a year). In addition, the value of Ritchie’s index measured once a year is marginal and the HAQ is not sensitive enough to measure small changes in disease activity. The only conclusion can be that there is not a major impact of these events on the clinical course. This does not exclude the possibility of an effect on long-term development of the disease, and a continuing follow-up of the cohort could provide information on this point. The results of this prognostic study do not preclude a possible aetiological role of LE in RA [34]. Moreover, if LE have no impact on the course of the disease, it does not mean that they have no importance in other areas of the lives of patients, such as psychological well-being or quality of life [35].

**ACKNOWLEDGEMENTS**

The EURIDISS study is supported in France by an INSERM contract CRE 891102 and a grant from the Société Française de Rhumatologie, in The Netherlands by the Ministry of Welfare, Health and Cultural Affairs and Het National Reumafonds, and internationally by the COMAC-Health Service Research contract MR4*-0344-NL, European Economic Community.

**REFERENCES**

6. Harder DW, Strauss JS, Kokes RF. Life events and