Assessment of quality-of-life in chronic hepatitis C: effect of treatment

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SUMMARY

Objectives — To study Quality of Life during chronic hepatitis C infection in patients recruited by hospital-based- or private hepatologists and to assess the effect of antiviral therapy.

Methods — A self-administered quality of life questionnaire (SF36) was proposed before, during, and 6 months after the end of treatment. The quality of life scales were assessed according to treatment response.

Results — 599 patients filled in the questionnaire before treatment and 168 patients 6 months after the end of treatment. After 6 months of therapy, patients with treatment response (n = 54) showed increased scores in all SF-36 scales, this increase reaching more than 25% for “Role Physical”, “General Health Perception” and “Vitality” scores. Non-responders (n = 70) had an impairment of physical scores but a general improvement of Mental Health.

Conclusion — This study confirms that sustained virological response is associated with an improved quality of life in hepatitis C patients. However, non-responders still have a positive “General Health Perception”. Together with the development of new therapies, these observations could help to convince reluctant patients to be treated.

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Introduction

Chronic hepatitis C virus (HCV) infection is frequent and often a fortuitous discovery of screening tests. At diagnosis, less than half of patients are symptomatic. When present functional signs are usually nonspecific, mainly fatigue which is difficult to assess objectively [1]. The Fatigue Impact Scale introduced in 1994 was the first specific questionnaire to be validated [2].

The physical and mental impact of disease can be assessed by measuring the patient’s quality-of-life (QoL) and perception of general health determined as “the functional impact of a disease and its treatment as perceived by the patient”. Four dimensions can be distinguished: physical and occupational activity, emotional status, social life, somatic sensations [3]. QoL scores, which can be monitored over time, provide an objective measure of the impact of a disease. QoL assessment has become a commonly used tool to evaluate the impact of treatment in many chronic conditions [4, 5].

Assessing QoL requires an adapted questionnaire. A wide variety of QoL questionnaires have been proposed, hindering comparisons between studies [6, 7]. The Short Form 36 (SF-36) [8] is however a widely used self-administered questionnaire which provides a reliable assessment of health-related QoL. The French version has been validated [9].

In hepatogastroenterology, QoL is a relatively new concept [10]. Recent French and European consensus conferences on HCV infection have underlined its importance [11, 12]. Before treatment, and irrespective of the evaluation technique, most published studies have reported a significant decline in physical and emotional status in patients with chronic HCV infection in comparison with control populations free of chronic disease [11, 13, 14]. Patients experience impaired physical capacity and vitality and altered emotional and social life [15-17]. Loss of appetite, reduced occupational and daily activities, and limited capacity to recover have been described [16]. Impact on sexual life and fear of the future have also been reported [17]. Several studies suggest that impairment in physical and mental health in subjects with chronic HCV infection could be greater than observed in subjects with other chronic diseases such as hepatitis B virus (HBV) infection [18], hypertension, and insulin-dependent diabetes mellitus [15]. The physical impact is comparable to that observed in depression [15]. It is essential to evaluate the influence of treatment on QoL in patients with chronic HCV infection to assess the impact of side effects and treatment response [20]. In naive patients, six months after treatment end, responders exhibit an improvement in most of the QoL scores in comparison with non-responders [21]. In subjects who relapse after a first treatment, significant improvement in vitality and social life is observed among those with sustained virological response or histological improvement six months after terminating a new treatment [22, 23].

The objective of this multicentric French study was to evaluate QoL and impact of treatment on QoL in patients with chronic HCV infection recruited by 189 hospital-based or private hepatogastroenterologists.

Patients and methods

Study population

For this multicentric prospective survey, 189 hospital-based or private hepatogastroenterologists recruited 599 patients between January 1997 and January 1999. These patients had histologically proven HCV infection and were naïve to antiviral treatment. There was an indication for treatment 

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This survey was conducted by CGEOG Commission Hépatologie du Comité de Réflexion des Cabinets de Groupe en Gastroentérologie in association with AFEF (Association Française pour l’Ecole du Foie) and ANGOF (Association Nationale des Gastroentérologues des Hôpitaux non Universitaires).

Scientific committee: Marc BOURJEBES, Xavier CAUSSE, Hervé DESMORAT, Jean-Paul JACQUES, Franck MOUNIER, Stanislas POL.
treatment in all patients. The patients were managed in the routine setting and were generally given standard monotherapy with interferon in compliance with the marketing approval recommendations at the time of study onset. Some patients were also given combination therapy with an interferon-ribavirin regimen. Demographic, epidemiological, biological, virological and histological data were collected at inclusion (M0). The following data were noted in the context of routine patient management: age, gender, source and duration of infection, serum ALAT and GGT, qualitative and quantitative PCR, genotype, overall and associated Knodell score.

The survey was designed to record available biological and virological data at treatment onset, at six months treatment (M6) and at twelve months treatment (M12) as well as six months after treatment and.

To study the impact of treatment on changes in QoL, data were required at M0 and six months after treatment and to retain patients for analysis, irrespective of the reason for interrupting the treatment or its duration. Response or nonresponse to treatment were determined from biological data (ALAT and PCR negative for HCV RNA). The survey was prospective. QoL was assessed with a self-administered questionnaire at M0, M6, M12 and six months after treatment onset to study the impact of treatment on changes in QoL, data were required at M0 and six months after treatment and.

The study population at M0 included 599 HCV RNA-positive patients. At M0, 168 patients had complete follow-up results (ALAT ≤ ULN and PCR negative for HCV RNA). The mean number of missing data per questionnaire per patient was 0.5.

Statistical analysis

To search for relationships between QoL scores and clinical data, nominal variables were compared between groups of patients using the chi-square test or the exact Fisher test as appropriate and ordinal variables were compared between groups of patients using the Mann Whitney-Wilcoxon or the Kruskal-Wallis test as appropriate. P < 0.05 was considered statistically significant. The statistical analysis was performed with SAS software (version 6.12).

Results

Patient characteristics

Population at M0

The study population at M0 included 599 HCV RNA-positive patients. The mean age was 42 ± 13 years (mean ± standard deviation); 62% were men and 38% women.

ABBREVIATIONS

MCS Mental component score
PCS Physical component score

The presumed route of infection was blood transfusion for 163 patients (27.2%), intravenous drug use for 230 (38.4%), another route (known or not) for 191 (31.9%), blood transfusion and intravenous drug use for 8 patients (1.3%), and an undetermined route for 7 (1.2%). Estimated duration of infection was 13.1 ± 8.2 years. Mean serum ALAT was 2.6 ± 2 ULN and mean serum GGT was 1.6 ± 2.5 ULN. The overall Knodell score was 8.2 ± 2.4, and the activity and fibrosis scores were 6.5 ± 2.2 and 1.7 ± 1.2 respectively. Cirrhosis was present in 9.5% of patients. The viral genotype was known for 234 patients: genotype 1a or 1b (N = 119), genotype 3 (N = 90), other genotype (N = 35).

Population at study end

Six months after treatment end, 431 patients did not attend consultations or had missing data. QoL scores were available at M0 and six months after treatment end for 168 patients. Among these 168 patients, 54 were complete responders, 70 were non-responders, and 44 had discordant biological and virological results (ALAT ≤ ULN and HCV RNA+ or ALAT > ULN and HCV RNA-). These latter patients were excluded from the analysis.

Quality-of-life scores

Acceptability

There were no missing data for 82% of the questionnaires. The mean number of missing data per questionnaire per patient was 0.5.

Quality-of-life at inclusion

The scores of the eight SF-36 scales and PCS and MCS are presented in Table II for patients included in the analysis and for responders and nonresponders.

There was no significant difference in the summary scores (PCS, MCS, and change in health) between responders and nonresponders (Wilcoxon test: P = 0.37 for PCS, P = 0.68 for MCS, and P = 0.17 for change in health).

Quality-of-life at M6, M12 and six months post-treatment (Table III)

For responders, the scores of the eight SF-36 scales increased, more than 25% for physical role, general health perception, vitality and emotional role, mental health, and mental component score (MCS). An improvement in vitality and general health perception was also observed.

Changes in Quality-of-life from M0 to six months post-treatment (Figure 1)

In responders, the summary scores (PCS and MCS) declined after six months treatment, then progressively improved up through six months post-treatment. In nonresponders, the PCS was lower after six months of treatment and remained low throughout the study. Conversely, the MCS varied little during the period of treatment. In each population, the sign rank test was applied to compare change in the summary scores (PCS and MCS and change in health) between M0 and six months post-treatment versus absence of change. In responders, there was a significant improvement in the three scores (PCS, MCS, and change in health). On the contrary PCS exhibited a significant decline (Table III).
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Discussion

The impact of disease and treatment on the patient's QoL has become an important medical concern. Several studies evaluating QoL in patients with HCV infection have demonstrated that patients have a good perception of their altered well-being [16]. This alteration in health status involves physical [29] and mental and emotional components [21, 30]. The presence of co-morbid conditions [31, 32] or extrahepatic manifestations such as arthralgia, myalgia, pruritis, or sicca syndrome [33] or possible effect of HCV on the central nervous system may also play an important role [34-36]. It is also demonstrated that knowledge of the diagnosis of HCV infection can have in itself a negative effect on QoL [37]. Knowledge of risks (cirrhosis, hepatocellular carcinoma) undoubtedly has an important impact on QoL. The epidemiological characteristics of our study population of nearly

| Table I | Quality-of-life scores at inclusion. Scoring of the eight scales may range from 0 (lowest level of quality-of-life) to 100 (highest theoretical score). Physical component score (PCS) and mental component score (MCS) have a mean reference value of 50. Change in Health is assessed using a score ranging from 0 to 5.

<table>
<thead>
<tr>
<th>Included patients</th>
<th>Responders</th>
<th>Nonresponders</th>
</tr>
</thead>
<tbody>
<tr>
<td>N = 599</td>
<td>N = 54</td>
<td>N = 70</td>
</tr>
<tr>
<td><strong>Mean ± SD</strong></td>
<td><strong>Median</strong></td>
<td><strong>Mean ± SD</strong></td>
</tr>
<tr>
<td>Physical activity</td>
<td>82.1 ± 21.5</td>
<td>811 ± 22.7</td>
</tr>
<tr>
<td>Physical role</td>
<td>62.2 ± 40.5</td>
<td>60.7 ± 39.6</td>
</tr>
<tr>
<td>Emotional role</td>
<td>58.8 ± 40.4</td>
<td>64.2 ± 34.9</td>
</tr>
<tr>
<td>Social role</td>
<td>65.1 ± 24.5</td>
<td>63.7 ± 22.7</td>
</tr>
<tr>
<td>Bodily pain</td>
<td>68.0 ± 26.1</td>
<td>68.7 ± 24.7</td>
</tr>
<tr>
<td>Mental health</td>
<td>55.6 ± 20.1</td>
<td>55.9 ± 20.3</td>
</tr>
<tr>
<td>Perception of general health</td>
<td>54.1 ± 19.9</td>
<td>50.3 ± 20.2</td>
</tr>
<tr>
<td>Vitality</td>
<td>65.0 ± 20.2</td>
<td>62.5 ± 22.7</td>
</tr>
<tr>
<td>Physical component score</td>
<td>47.8 ± 9.2</td>
<td>46.8 ± 9.6</td>
</tr>
<tr>
<td>Mental component score</td>
<td>39.2 ± 11.1</td>
<td>39.3 ± 10.1</td>
</tr>
<tr>
<td>Change in health</td>
<td>2.88 ± 0.81</td>
<td>2.65 ± 0.74</td>
</tr>
</tbody>
</table>

Comparison of scores by response status

Changes in the QoL scores between M0 and six months post-treatment were compared between responders and nonresponders. There was a significant difference for PCS and change in health, but no difference for MCS (Table IV).

| Table II | Quality-of-life scores at M0, M6, M12 and six months after the end of treatment in sustained responders (SR, N = 54) and nonresponders (NR, N = 70) and changes in these scores between M0 and six months after the end of treatment. Score of the eight SF-36 scales may range from 0 (lowest quality-of-life) to 100 (highest theoretical score). PCS (physical component score) and MCS (mental composite score) have a mean reference value of 50. Change in Health is assessed using a score ranging from 0 to 5.

<table>
<thead>
<tr>
<th></th>
<th>M0 SR</th>
<th>M0 NR</th>
<th>M6 SR</th>
<th>M6 NR</th>
<th>M12 SR</th>
<th>M12 NR</th>
<th>6 months post-treatment SR</th>
<th>6 months post-treatment NR</th>
<th>Change between M0 and 6 months post-treatment SR (%)</th>
<th>6 months post-treatment (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical activity</td>
<td>81.4</td>
<td>80.4</td>
<td>71.5</td>
<td>79.8</td>
<td>78.1</td>
<td>76.5</td>
<td>83.1</td>
<td>76.4</td>
<td>+2.09</td>
<td>-5.0</td>
</tr>
<tr>
<td>Physical role</td>
<td>60.7</td>
<td>66.6</td>
<td>52.7</td>
<td>59.8</td>
<td>57.1</td>
<td>55.8</td>
<td>75.8</td>
<td>65.4</td>
<td>+24.9</td>
<td>-1.8</td>
</tr>
<tr>
<td>Emotional role</td>
<td>64.2</td>
<td>57.1</td>
<td>50.7</td>
<td>57.3</td>
<td>56.4</td>
<td>57.3</td>
<td>71.3</td>
<td>64.3</td>
<td>+12.6</td>
<td>+12.7</td>
</tr>
<tr>
<td>Social role</td>
<td>63.7</td>
<td>68.4</td>
<td>57.5</td>
<td>67.9</td>
<td>64.5</td>
<td>61.9</td>
<td>71.1</td>
<td>68.3</td>
<td>+13.3</td>
<td>-0.1</td>
</tr>
<tr>
<td>Bodily pain</td>
<td>8.7</td>
<td>67.6</td>
<td>58.6</td>
<td>64.4</td>
<td>64.3</td>
<td>56.4</td>
<td>74.5</td>
<td>68.8</td>
<td>+8.4</td>
<td>+1.5</td>
</tr>
<tr>
<td>Mental health</td>
<td>55.9</td>
<td>55.6</td>
<td>51.7</td>
<td>60.1</td>
<td>53.8</td>
<td>57.2</td>
<td>61.9</td>
<td>58.5</td>
<td>+10.7</td>
<td>+5.2</td>
</tr>
<tr>
<td>Perception of general health</td>
<td>50.3</td>
<td>57.4</td>
<td>50.7</td>
<td>62.0</td>
<td>55.4</td>
<td>57.1</td>
<td>63.4</td>
<td>52.0</td>
<td>+26.0</td>
<td>-9.0</td>
</tr>
<tr>
<td>Vitality</td>
<td>42.3</td>
<td>46.6</td>
<td>41.5</td>
<td>47.6</td>
<td>44.4</td>
<td>41.7</td>
<td>53.5</td>
<td>48.7</td>
<td>+26.5</td>
<td>+4.5</td>
</tr>
<tr>
<td>Physical component score</td>
<td>46.8</td>
<td>48.4</td>
<td>44.3</td>
<td>47.2</td>
<td>47.1</td>
<td>44.8</td>
<td>50.0</td>
<td>46.1</td>
<td>+6.9</td>
<td>-4.8</td>
</tr>
<tr>
<td>Mental component score</td>
<td>39.9</td>
<td>39.8</td>
<td>37.4</td>
<td>41.3</td>
<td>38.6</td>
<td>39.9</td>
<td>44.2</td>
<td>42.1</td>
<td>+12.5</td>
<td>+6.8</td>
</tr>
<tr>
<td>Change in health</td>
<td>2.65</td>
<td>2.84</td>
<td>3.43</td>
<td>3.37</td>
<td>3.57</td>
<td>3.15</td>
<td>3.94</td>
<td>3.41</td>
<td>+48.7</td>
<td>+20.1</td>
</tr>
</tbody>
</table>
600 patients were similar to those described in the survey of 6,664 patients with chronic HCV infection performed for the French Ministry of Health [38]. To date, most published series have been selected among specialized center recruitments which could induce an overestimation of the proportion of patients with severe forms of the disease. The population in our study, recruited by 189 hospital-based or private hepatogastroenterologists (62% and 38% of patients respectively), was thus probably representative of the general population of HCV-infected subjects. One could expect that the homogeneous nature of therapeutic trial populations could induce a bias in the QoL assessment. Inclusion-exclusion criteria, as well as the follow-up schedule can have an effect, particularly on QoL. The rate of response to the self-administered questionnaire (greater than 80%) also emphasizes the reliability of QoL assessment in a population of patients recruited in a routine care setting. The results indicate that the QoL scores before treatment were very similar to those reported in the literature. For the eight SF-36 scales, the scores were significantly lower than in control groups analyzed in other studies or in patients with another type of infection such as HBV [16]. These results, as well as those reported for a sample of type 2 diabetes patients [15, 21] thus confirm that chronic HCV infection as a significant though often "silent" impact on QoL [39]. This impact is independent of therapeutic effects and thus a direct consequence of the disease itself.

In a North American study including 912 patients [40], McHutchison et al. compared QoL scores before and after combination interferon-ribavirin antiviral treatment. Their assessment was based on the SF-36 questionnaire and specific questions for HCV infection and disclosed that before treatment, patients with HCV infection present deteriorated QoL. The results also indicated that most of the scores returned to normal in patients who sustained virological response could be a supplementary argument for proposing treatment in patients with minimal histological lesions.

Table III – Change in quality-of-life summary scores between M0 and six months post-treatment in responders and non-responders to antiviral therapy.

<table>
<thead>
<tr>
<th></th>
<th>Responders N=54</th>
<th>P</th>
<th>Nonresponders N=70</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical component score</td>
<td>3.33</td>
<td>0.0038</td>
<td>-2.47</td>
<td>0.0037</td>
</tr>
<tr>
<td>Mental component score</td>
<td>4.57</td>
<td>0.0042</td>
<td>2.21</td>
<td>0.076</td>
</tr>
<tr>
<td>Change in health</td>
<td>1.33</td>
<td>&lt;0.0001</td>
<td>0.57</td>
<td>0.0004</td>
</tr>
</tbody>
</table>

Fig. 1 – Evolution of the Physical Component Score (PCS) and Mental Component Score (MCS) in responder and non-responders.
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