Patient information for liver biopsy: impact of a video movie

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SUMMARY

Aims — The information given to patients before a medical procedure is usually delivered verbally and in the form of a written document. Viewing a video movie about the procedure might be helpful in improving the quality of patient information and thus contributed to reduce patient anxiety. The aim of this prospective study on the methods used to deliver information to patients scheduled for liver biopsy was to determine, in comparison with standard information delivery, the impact on anxiety and understanding of additional information provided by a video movie.

Methods — Patients included in this study were scheduled for liver biopsy. Three days before the procedure, a physician informed the patients about liver biopsy and gave them a written information document. After this standard information delivery, the patients were randomly assigned to two groups, to view or not a video movie illustrating liver biopsy and recalling the information provided in the information document. Anxiety was measured after the information visit and just before the biopsy procedure using Spielberger’s self-administered STAI-Y questionnaire. Patient understanding of and satisfaction with the information received were evaluated respectively before and after the procedure.

Results — Among the 67 patients retained for analysis, 33 viewed the information video and 34 did not. The level of anxiety measured at the information visit and before liver biopsy was similar in the two groups (38.8 and 37.4 with video versus 38.9 and 40.1 without video). The patients had an excellent understanding of the information received (12.3/14 with video; 12.7/14 without video) and were well satisfied with the information received.

Conclusion — The patients understood and were well satisfied with the information received about liver biopsy. Complementary information in the form of a video movie had no effect on patient anxiety.

RÉSUMÉ

Information du malade à la biopsie de foie : impact d’un film vidéo

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(Objectif) — L’information du malade avant un examen doit être classiquement faite verbalement et par écrit. La visualisation de l’examen sous forme d’un film pourrait aider à améliorer la compréhension du malade et diminuer son anxiété. Le but de cette étude prospective était de déterminer l’impact sur l’anxiété et la compréhension de l’ajout d’une information par film vidéo par rapport à une information standard sur la ponction biopsie hépatique (PBH).

Méthodes — Les malades inclus dans cette étude recevaient une information verbale et écrite sur la ponction biopsie hépatique au cours d’une consultation. Les malades étaient alors randomisés pour visionner une cassette-vidéo d’information en plus de l’information standard. L’anxiété était mesurée par l’autoquestionnaire STAI-Y de Spielberger après la consultation puis juste avant la ponction biopsie hépatique. La compréhension de l’information et la satisfaction sur l’information reçue étaient évaluées respectivement avant et après la PBH.

Résultats — Sur les 67 malades évalués, 33 avaient reçu une information vidéo. L’anxiété avant la ponction biopsie hépatique était similaire à celle mesurée lors de la consultation (avec vidéo : 38,8 et 37,4 ; sans vidéo : 38,9 et 40,1). La compréhension était excellente (avec vidéo : 12,3/14 ; sans vidéo : 12,7/14), ainsi que la satisfaction de l’information reçue.

Conclusion — La compréhension et la satisfaction de l’information sur la ponction biopsie hépatique ont été excellentes. Une information filmée complémentaire de l’information classique verbale et écrite n’a pas modifié l’anxiété des malades.

Patient information has become a regular feature of clinical practice made mandatory in France by article 35 of the code of public health regulations. It is generally agreed that patient information is associated with better patient satisfaction, better awareness of the potential risks and benefits of examinations to be performed, lower rates of anxiety and complications, shorter hospital stay, and lower analgesic consumption [1, 2]. The beneficial effects of patient information could be expected to result in part from less stress, frequently noted before an invasive examination [3]. High levels of anxiety have been associated with more frequent adverse effects, less satisfactory tolerance [4], or greater pain after the examination [5].

Verbal information is often poorly understood and retained. This might occur because the physician does not have enough time to devote to information delivery or uses terms considered overly technical by the patients [6]. Written information has clearly been shown to improve comprehension and patient satisfaction [2, 7], even though information documents are read by only half of patients [8] and have a limited impact on patient stress [2, 7-9]. Certain authors have proposed using video films to deliver medical information in order to improve patient comprehension and satisfaction and reduce stress. The results concerning the impact on anxiety have been discordant [10, 11].

Patients are often very apprehensive about having a liver biopsy. Several studies have noted that stress is more frequent among females, is correlated with the intensity of post-biopsy pain, and favors use of analgesics; it is also known that anti-anxiety drugs improve tolerance [12-15]. To our knowledge, no study had measured the impact of information delivered before liver biopsy on patient anxiety, comprehension, and satisfaction.
The purpose of this study was to measure the impact of a standard video movie used to deliver information as a complement to verbal and written information on anxiety, comprehension, and satisfaction measured before liver biopsy in chronic liver disease patients.

Patients and methods

This study was conducted in the hepatogastroenterology departments of the Nîmes and Avignon University Hospitals. Patients aged over 18 years scheduled for transparietal liver biopsy performed under local anesthesia in an outpatient setting were eligible for inclusion. Exclusion factors were cognitive disorders, impaired communication skills or an uncompensated disability (vision, hearing, motor deficit), and poor understanding of French (written or oral).

This study was conducted in accordance with the methodology for controlled randomized prospective studies using an alternate month design for periods of intervention and control [16]. Even numbered months were periods of intervention (use of the video film), and odd numbered months were periods of control. At the information visit preceding the liver biopsy, the physician delivered standardized oral information, recalling the elements presented on the information document prepared by the French society of Gastroenterology (SNFGE) with slightly more detailed information concerning the risk of bleeding. At the end of the visit, the physician also gave the patient the standard information document. During the periods of intervention, in addition to delivery of the same oral and written information, a 7-min video film on liver biopsy prepared by the staff of the hepatogastroenterology department of the Nîmes University Hospital was also presented. The information provided by the video film was similar to that presented in the information document. The information concerned the following topics: usefulness and necessity of the biopsy, preparation for the biopsy, the biopsy procedure, after the biopsy, benefits, and complications. In the video, these different topics were presented in visual form by filming a consultation, a day hospitalization, and the biopsy procedure.

Anxiety level was assessed with Spielberger’s self-administered state-trait anxiety index STAI-Y questionnaire [17, 18] which uses two distinct 20-items scales for trait-anxiety and state-anxiety. Trait-anxiety corresponds to commonly experienced anxiety while state-anxiety is a sensitive indicator of transient changes in level of anxiety. The questionnaire produces an index scored from 20 (no anxiety) to 80 (maximal anxiety). A change of more than 5 points is considered clinically significant. Trait-anxiety and state-anxiety were assessed at the end of the information visit before the video film. Anxiety level was re-assessed one hour after the liver biopsy. The patients’ comprehension was assessed using a questionnaire with 14 true-false questions. This questionnaire was self-administered with staff assistance if needed and was completed at the same time as the second anxiety questionnaire (appendix II). This questionnaire concerned the patients’ understanding of the usefulness (2 questions), the complications (5 questions), and practical execution of the liver biopsy (7 questions). The maximum was 14 points (one point for each correct answer). Satisfaction with the information delivered was assessed after performing the liver biopsy using a semi-quantitative scale for the following items scored 1 to 4: usefulness, complication, practical execution of the liver biopsy (appendix II). The patient returned the questionnaire in a sealed envelope, either giving it to the secretary before leaving the department or mailing it later. The patients completed all questionnaires alone, without the presence of a member of the department staff.

The chi-square test was used for qualitative variables and Student’s t test or the Wilcoxon test or ANOVA, as appropriate, for quantitative variables. ANOVA for repeated measurements was used to compare changes in the state-anxiety index. The Cronbach coefficient, determined to assess the homogeneous nature of responses to the satisfaction questionnaire, was 0.25, so the three questions were analyzed separately. Spearman’s non-parametric coefficient of correlation was determined to search for links between the trait-anxiety index and the state-anxiety index. Results are expressed as mean ± standard deviation (m±SD). The level of significance was set at 0.05. SAS 8.2 was used for the statistical analysis.

Results

Eighty-three patients were included in the study from November 2001 to October 2003. After exclusion of 16 patients because of incomplete (response to less than 80% of questionnaire items) or missing data, 67 patients were retained for analysis (table I). Among these patients, 33 were in the video group (video+) and 34 in the group without video (video-). In the video+ group, one patient declined the liver biopsy at the last minute. The groups were comparable regarding age, educational level, cause of the liver disease (hepatitis C), and prior hist-

Table I. – General characteristics of the study population.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Group video + N=33</th>
<th>Group video - N=34</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>22</td>
<td>18</td>
</tr>
<tr>
<td>Female</td>
<td>11</td>
<td>16</td>
</tr>
<tr>
<td>Age (years)</td>
<td>44.4±12.3</td>
<td>43.7±10.3</td>
</tr>
<tr>
<td>Educational level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;Baccalauréat</td>
<td>19</td>
<td>25</td>
</tr>
<tr>
<td>≥Baccalauréat</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Prior biopsy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>13</td>
<td>9</td>
</tr>
<tr>
<td>No</td>
<td>20</td>
<td>25</td>
</tr>
<tr>
<td>Indication</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hepatitis C</td>
<td>26</td>
<td>30</td>
</tr>
<tr>
<td>Not Hepatitis C</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>US-guided biopsy</td>
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<td></td>
</tr>
<tr>
<td>Yes</td>
<td>19</td>
<td>16</td>
</tr>
<tr>
<td>No</td>
<td>13</td>
<td>18</td>
</tr>
<tr>
<td>Anti-anxiety premedication</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>No</td>
<td>32</td>
<td>97</td>
</tr>
</tbody>
</table>

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tory of liver biopsy. A transparietal biopsy without general anesthesia had been performed for nearly all of the patients who had had a prior liver biopsy. More than half of the liver biopsies performed during the course of this study were ultrasound-guided.

The trait-anxiety and state-anxiety indexes noted at the first evaluation before presentation of the video (for the video+ group) were similar for the two groups (table II). No difference was noted in the trait-anxiety index at the information visit or just before the biopsy between age groups (≥ or <40 years), educational level (with or without the French secondary education diploma, baccaulauréat), gender, or prior history of liver biopsy. The state-anxiety index before liver biopsy was 40.13 (38.5±11.7 for males and 39.5±12.0 for females). There was no significant change after the video (table II). The impact of viewing the video on anxiety was not affected by age, gender, educational level or history of liver biopsy. In the video+ group, among women, the state-anxiety index rose (+5 points) from the information visit to before the liver biopsy and among men it declined (-4.6 points) [P<0.05]. For patients with at least higher education (baccaulauréat and above) anxiety tended to be higher (+5.8 points) among the video-group [P>0.05]. The trait-anxiety index was significantly higher among patients with hepatitis C than the others [41.5±9.6 vs 39.7±7.8]. Before biopsy, there was a trend for a lower state-anxiety index among the same patients with hepatitis C [37.9±12.3 vs 43.4±17.5, P=0.4]. No correlation was found between trait-anxiety and state-anxiety (r=0.60, P<0.0001) or between two measurements of the state-anxiety index (r=0.44, P=0.0002).

The comprehension assessment (appendix I) showed excellent understanding for both groups. Patients provided on average 13 correct responses (figure 1 and table II). Educational level, gender, history of liver biopsy, age, and level of the trait-anxiety and state-anxiety index were not affected by comprehension of the information delivered. Patient satisfaction was very good for all three questions (all scored the maximum 4 points) (appendix II): question 1: 3.9±0.48, question 2: 3.9±0.46, question 3: 3.9±0.39 [P>0.05].

**Discussion**

We found that delivering medical information with a video movie in addition to verbal and written information before a liver biopsy procedure had no effect on patient anxiety, comprehension of the procedure, or satisfaction. We did however note that our initial concern, as also related by other authors [19], that delivering more explicit information could increase the patients’ anxiety level and cause more patients to decline having the procedure performed were unfounded. The patients understood the procedure very well and were very satisfied.

There could be several reasons why presenting a video movie had no impact. First, information provided in oral form or a written document is sufficient to achieve excellent patient understanding of the procedure, so that there would be little additional benefit of a video on understanding-related anxiety. The time interval between information delivery and the biopsy may have weakened any potential benefit of viewing the movie. This time effect has been observed by others with various types of information delivery [20]. It can also be noted that assessing anxiety level one hour before executing an invasive procedure limited the chances of observing a difference between the two groups, the level of anxiety naturally rising as the time for the procedure drew closer. In one study comparing standard information delivery to a behavioral therapy approach before magnetic resonance imaging [21] reported the same level of anxiety when measurements were made just before performing the examination. Conversely, when the measurements were made while the examination was being performed, the behavioral therapy approach had a clear benefit. This demonstrates how difficult it is to have an impact on anxiety just before or during a medical examination.

It was difficult to demonstrate the usefulness of this new method of information delivery because of the low baseline level of the anxiety. In our work, the baseline level was average (index 35-40), similar to that reported by Eisenberg who also measured anxiety before liver biopsy, and equivalent to the level recorded before intraspinal corticosteroid injections [2]. It was however lower than observed in candidates for breast biopsy [22]. It would be reasonable to expect anxiety to be related not only to the procedure itself, but also to the potential diagnostic and prognostic impact of the results. The low level of anxiety recorded in this study was most likely related to hepatitis C, the main indication for liver biopsy. Our patients were already aware of their diagnosis, and since the liver biopsy was being performed within the framework of a therapeutic protocol, it may have been related with cure. Other authors have also noted a lack of increased anxiety among patients with hepatitis C [13]. Cadranel et al. [12] found that the anxiety-favoring effect of hepatitis C was no longer significant at multivariate analysis when anxiety was measured with a more rapid visual analog scale. Riley et al. [14] found a correlation between pain and/or use of

**Table II.** Effect of video movie on patients’ anxiety, understanding, and satisfaction (mean±SD).

<table>
<thead>
<tr>
<th></th>
<th>Group video +</th>
<th>Group video -</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trait-anxiety (/80)</td>
<td>42±10.5</td>
<td>40.4±8</td>
<td>0.51</td>
</tr>
<tr>
<td>State-anxiety after visit (/80)</td>
<td>38.8±11.7</td>
<td>38.9±11.8</td>
<td>0.99</td>
</tr>
<tr>
<td>Trait-anxiety before biopsy (/80)</td>
<td>37.5±14.6</td>
<td>39.4±12.8</td>
<td>0.38</td>
</tr>
<tr>
<td>Understanding questionnaire (/14)</td>
<td>12.3±1.9</td>
<td>12.7±1.3</td>
<td>0.49</td>
</tr>
<tr>
<td>Satisfaction (/12)</td>
<td>11.8±0.5</td>
<td>11.4±1</td>
<td>0.11</td>
</tr>
</tbody>
</table>

Fig. 1 – Understanding score in the groups with (video+) and without video (video-).

Score de compréhension dans les groupes avec (vidéo+) et sans vidéo (vidéo-).
analgesics and anxiety, hepatitis C and intravenous drug abuse. In this context, there might be a selection bias favoring patients convinced of the need for a liver biopsy among the general hepatitis C population.

The main limitation of the study was the small number of patients included. The sample size was sufficient to demonstrate the statistical significance of a change of 10 points in the anxiety index, a clinically detectable change, between two groups. For a clinically significant difference of 5 points, nearly 100 patients would have been needed in each group. The high level of patient understanding suggests that the dedicated questionnaire was not selective enough, or also that physician bias may have been operating since physicians might deliver more carefully information known to be later assessed with a questionnaire. Nevertheless, the comprehension questionnaire was also conceived as a teaching tool so it would have been unwise to include false information items which might have incited patients to commit errors the day of the biopsy.

Considering our negative results, what factors might be expected to have contributed to the success of studies proving the effect of viewing a video on anxiety? Methodologically, only one of these studies, reported by Luck et al. [10] was similar to our study. Unfortunately, these authors did not provide an explicit statement concerning the delivery of oral information. In addition, the time interval between information delivery and colonoscopy was one week, which might be considered long for retaining information from a video film. In the study reported by Herrmann et al. [23] concerning cardiac catheterism, video information was also examined as a supplementary information source associated or not with standard oral and written information delivery. However, these authors studied state-anxiety in each group just before information delivery and the day before the procedure, not just before the procedure. Furthermore, they evaluated the initial state-anxiety, measured before information delivery the day of admission, a moment particularly favorable for anxiety. Considering these two elements, the chances of observing a change in state-anxiety was greater than in our study. Ayral et al. [24] focused on patients about to undergo joint lavage in knee osteoarthritis using a complementary video plus oral information in comparison with oral information alone. Their patients did not receive written documents. Anxiety was evaluated before the procedure using a visual analog scale which did not distinguish trait-anxiety from state-anxiety. In their review, Lee et al. [25] examined controlled trials on information delivery to parents of children about to undergo an anthesia using written documents or a video movie on anxiety. However, the impact was rather limited (5-point fall in anxiety). In addition, in half of the trials, information was deliver the day before or the day of the procedure, which led to better anxiety scores compared with information delivered one week before the procedure [26]. In cancer patients, Thomas et al. [27] showed that video movies used as a complementary information source in addition to verbal or written information before chemotherapy or radiotherapy gave superior results. The baseline anxiety of the patients was not however known and the patients were allowed to keep a copy of movie so they could view it as often as they liked.

What can be expected in terms of video movies for information deliver before medical procedures? The most appropriate approach might be to use video material on an individual basis, allowing the patient to decide when and how often to view the movie. The would provide a supplementary source of information for patients who desire more information [28]. The video movie can also allow delivery of information which despite the handicap of intellectual or linguistic barriers.

ACKNOWLEDGEMENTS - The authors thank Schering Plough for their support for this study and the Audio-Visual team of the Nimes University hospital who produced the video movie.

REFERENCES


Appendix 1. – Understanding Questionnaire.

Your answers to these questions will be used to evaluate the quality of the information you received from the medical staff (physicians and nurses) on liver biopsy

1) A liver biopsy is used to measure the severity of your liver disease true ❑ false ❑
2) A liver biopsy is used to treat your liver disease by by injecting drugs directly into the liver true ❑ false ❑
3) There may be some pain in the right shoulder after a liver biopsy true ❑ false ❑
4) One can stand up immediately after a liver biopsy true ❑ false ❑
5) A hematoma (blood collection) may occur after a liver biopsy true ❑ false ❑
6) The pain caused by a liver biopsy is minor and can be relieved with a pain killer (paracetamol) true ❑ false ❑
7) A liver biopsy is performed with a single-use throw-away sterile needle true ❑ false ❑
8) The biopsy specimen taken from the liver measures about 1 millimeter in diameter true ❑ false ❑
9) A liver biopsy usually leaves a scar true ❑ false ❑
10) The hospital stay for a liver biopsy is usually more than one day true ❑ false ❑
11) Blood pressure and pulse should be monitored for true ❑ false ❑ six hours after a liver biopsy
12) When you return home after a liver biopsy you can stay alone (without assistance) true ❑ false ❑
13) Ten days before a liver biopsy, you should discontinue any drugs which modify blood coagulation (for example aspirin) true ❑ false ❑
14) Six hours after a liver biopsy, there is no risk of complications true ❑ false ❑

Reread your answers and check that your have answered all the questions. Thank you for your participation.

Appendix 2. – Satisfaction Questionnaire.

I received very clear information on:

| The risks of the procedure | very clear | somewhat | not really | not at all |
| The benefits of the procedure | ❑ | ❑ | ❑ | ❑ |
| The way the procedure is carried out | ❑ | ❑ | ❑ | ❑ |

Score

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