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Patients' perspectives towards malignant ascites: results of a prospective observational trial regarding expectations, characteristics and quality of life—a study of the North-Eastern-German Society of Gynecological Oncology

Robert Armbrust[1,3] · C. Neeb[1] · P. Thuss-Patience[2] · D. Lüftner[2] · K. Pietzner[1,3] · H. Riess[2] · G. Oskay-Öczelik[1,3] · R. Richter[1] · M. Keller[3] · J. Sehouli[1,3]

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Abstract

Purpose Malignant ascites (MA) is a frequent and common symptom in (gyneco-) oncological patients. The present trial evaluated and assessed patients' characteristics, clinical features and the possible influence of MA on QoL measurements.

Methods A prospective observational trial was conducted from Oct 2013 until Nov 2016. Therefore an interdisciplinary questionnaire was developed. Overall 250 patients with histological confirmed MA were included with different cancer entities (gynecological, gastrointestinal). The correlation of MA caused symptoms and QoL measurements was assessed using Kendall's tau b. Multivariable logistic regression models were applied to analyze the risks of symptoms or severe limitation in daily activities.

Results 125 questionnaires could be analyzed. The majority of patients with MA had diagnosis of ovarian cancer (68.8%) and were under current cancer treatment (57.6%), mostly chemotherapy. Over 50% reported abdominal tension as major symptom, around 56% of the patients had MA when cancer was firstly diagnosed. Regression analysis showed that patients with MA above 2l were significantly more likely to be harmed in everyday activities. However, the age, gender, type of malignancy and the current treatment (chemotherapy vs. no chemotherapy) had no significant influence.

Conclusion MA has a significantly impact on QoL measurements in cancer patients and might influence everyday activities including basic needs like eating, walking and body care. There is a high need for more information and education of patients with MA

Keywords Malignant ascites · Ovarian cancer · Gastrointestinal cancer · Quality of life

Purpose

Malignant ascites (MA) (10%) is an abnormal accumulation of fluid in the abdomen as a result of cancer and frequent in several malignancies including gastrointestinal and advanced gynecological cancers [1, 2]. The most common primary site is ovarian, fallopian and peritoneal cancer with 38%: MA occurs in around 89% of patients with FIGO stage II/III. The majority of women with ovarian cancer (OC) are not diagnosed until the disease is in an advanced stage FIGO III or IV, which significantly increases the risk of recurrence and early death because there is no effective screening approach for this disease [3–5]. However, symptoms are often non-specific including abdominal, urinary or pelvic pain and affects quality of life of the patients. Frequently

✉ Robert Armbrust
robert.armbrust@charite.de

1 Department of Gynecology With Center for Oncological Surgery, Charité European Competence Center for Ovarian Cancer, University Hospital Charité Berlin, Augustenburger Platz 1, 13353 Berlin, Germany

2 Department of Hematology, Oncology and Tumor Immunology, University Hospital Charité Berlin, Augustenburger Platz 1, 13353 Berlin, Germany

3 North-Eastern German Society of Gynecological Oncology (NOGGO), Augustenburger Platz 1, 13353 Berlin, Germany

reported symptoms of MA include anorexia, abdominal bloating, dyspnea and respiratory distress, fatigue, insomnia and abdominal pain [6, 7]. MA is also related with poor prognosis in cancer patients and limited palliative options [4].

Clinical management of large volumes of ascites can be a major problem, and the majority of patients are subjected to frequent aspirations and placement of drainages to temporarily relieve the symptoms [2, 7–14]. However, research on malignant ascites was mainly focused on pathophysiology, feasibility and its prognostic and predictive role [15, 16]. Nonetheless, little is known about patient-reported outcomes and the patient's perspectives about the clinical management. These aspects are especially important facing the challenging treatment of ascites as a main goal in palliative disease situation.

Until now, there is only one published trial dealing with Quality of life (QoL) Scores regarding different drainage techniques [17]. Despite this trial, patient-reported data are missing. Therefore, we initiated this survey about patients' perspectives and expectations as well as QoL measurements. Furthermore, we wanted to assess incidence and clinical features of patients' gynecological malignant ascites.

Material and methods

The questionnaire was developed by an interdisciplinary scientific advisory council and coordinated by the NOGGO study group (North-Eastern-German Society of Gynecological Oncology). Besides brief information on the purpose and the content of the survey, the questionnaire contains 38 items and is divided into two parts. The questions were developed based on an interprofessional workshop with patients, nurses, physicians and psychologists, an intensive literature search and have been tested in a pilot phase in ten patients with ovarian cancer regarding understanding and reproducibility.

The survey was conducted from October 2013 to November 2016 after approval by the local national ethic committees ("Ethikkomission Charité Universits-Hospital Berlin, applicant number EA2/102/13). The questionnaire was anonymous and its completion takes 5–10 min. Written informed consent was given by all participants in the trial.

Inclusion criteria were: histologically confirmed cancer with ascites, age $\geq$ 18 years, ability to read and understand adequately German.

The first part deals with basic information about the patient and his/her disease, including age, gender, body weight, height, type of cancer, date of initial diagnosis, surgical intervention, first appearance of ascites/MA, current physical/medical condition and type of ongoing therapy. The second part of the questionnaire deals with the patients' disorders due to MA, such as loss of appetite, pain, dyspnea, fatigue, insomnia, abdominal tension, edema, nausea, movement restriction/mobility disabilities. Moreover, the influence of MA on everyday life/activities like personal hygiene, eating/drinking, sexuality, walking and shopping is questioned. Furthermore, the patients were asked if they needed a punction/drainage of MA to experience relief, whether the punction was painful or accompanied by complications and if/what kind of therapy they received dealing with MA. Mainly, we asked the patients about the significance of a therapeutic success for their quality of life and for their expectation of life. The last section of the questionnaire contains questions about the patients' sources of information. Most questions could be answered as multiple choices or as free text. Three questions could be answered on a 5-point scale.Our questionnaire was developed to identity the patient's expectations and preferences not to measure the QoL of the patients.

Statistical analysis

Data are presented as frequency and rate. The correlation of ascites-related symptoms and daily activities was analyzed using Kendall's tau b. Multivariable logistic regression models were applied to analyze the risks of symptoms or severe limitation in daily activities. All analyzes were carried out with IBM® SPSS® Statistics 23 (SPSS Inc. an IBM Company, Chicago, Illinois, USA). All significances reported were two tailed at a level of 5%.

Results

Overall 125 (113 female, 12 male) patients were included in the analysis. Over two-third were diagnosed with ovarian cancer (68.8%) and had current symptoms due to ascites when fulfilling the questionnaire. 13.6% have been diagnosed with gastrointestinal malignancies. Detailed information about patients' characteristics are summarized in Table 1.

At the time of questioning, 57.6% of the patients were under current cancer treatment. Sources for knowledge about ascites differed widely, for detailed information see Table 2.

Primary type of treatment mostly included chemotherapy in 64.1%, but also immunotherapy in 23.1% as well as surgery in 12.8%. Nearly half of the patients reported that MA was diagnosed after consultation due to acute symptoms; whereas in 26.4% and 30% MA was seen within consultation for treatment planning or routine follow-up.

Around 56% of the patients had MA when cancer was firstly diagnosed, also 57% of the patients reported symptoms. Most common symptom was abdominal tension with 83.6%; other major symptoms are summarized in Fig. 1. This

Table 1 Summary of the age characteristics, type of cancer and currently reported symptoms of the asked patients ($N=125$)

	Percent
Age	
18–40	5.6
41–60	48.4
61–80	42.4
81–90	3.2
Type of cancer	
Pancreatic cancer	2.4
Breast cancer	4.8
Ovarian cancer	68.8
Liver cancer	0.8
Stomach cancer	10.4
Other	6.4
Current symptoms	
Yes	58.4
No	41.6

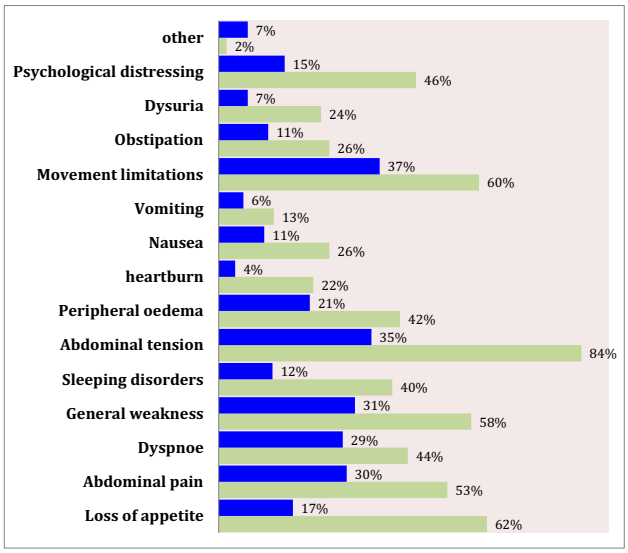

Fig. 1 Results of the symptoms caused by ascites: The blue bars indicate most common symptoms of malignant ascites as reported by the patients. The green bars show the percentage of the reported symptoms having the highest impact according to the patients

Table 2 Sources for knowledge about ascites as reported by the patients

	n	Percentage
No information at all	31	24.8
Physicians general	88	70.4
General practitioner	18	14.4
Medical oncologist	38	30.4
Gynecologist	32	25.6
Internet	26	20.8
Other	6	17.6
Flyer-information leaflet	16	12.8
Other patients	6	4.8

figure describes the symptoms with the highest impact on patients' well-being, especially abdominal tension (35.2%) and general activity/mobility disabilities (37.1%). Symptoms like heartburn (3.8%), dysuria and nausea (5.7%) seem to have the lowest impact.

If MA drainage was necessary or indicated, it was done in the majority of cases in the hospital and not in an outpatient environment. In 74% of the cases, more than 2 l were drained. Procedure-associated complication rate was generally low: in two cases, severe bleeding at the skin incision was reported and in another two cases, bowel perforation. Most of the patients did not report severe pain (79.2%). More than half felt fast and good relief of the symptoms (52.6%). However, in 66.4%, MA occurred again and patients reported again symptoms.

Multiple logistic regression analysis showed that patients with estimated ascites volume > 2l were more likely to report symptoms generally. However, the age, gender, type of malignancy and the current treatment (chemotherapy vs. no chemotherapy) had no significant influence. Patients with MA volume above 2l reported significantly more abdominal tension, loss of appetite, dyspnea, general weakness, pain and were emotionally more distressed.

Patients were also asked about the impact of ascites on daily activities and quality of life parameters. Bivariate correlation analysis showed that patient-reported symptoms due to ascites were significantly influenced in everyday activities which included: eating and drinking, sexual activity, walking, shopping and personal hygiene/body care. To better distinguish between light/moderate and severe/very severe influence, multiple logistic regression analysis was performed. This analysis showed that patients with MA above 2l were significantly more likely to be harmed in everyday activities (see also Table 3 and following). Patients > 70 years reported higher impact on daily eating/drinking ($p=0.039$; OR 0.03; 95% CI 0.001–0.083) on shopping ($p=0.021$; OR 0.015; 95% CI 0.001–0.95) and walking ($p=0.047$; OR 0.015; 95% CI 0.00–0.71). There was no influencing factor on sexual activities associated with MA. Nearly all patients reporting dyspnea, weakness, sleeping disorders and MA Volume below and above 2l were significantly more likely being less able to do walks or go shopping (for more details see Table 3).

Discussion

In this prospective observational trial, we demonstrated the significance of malignant ascites for the quality of life in cancer patients. Our data showed that in nearly half of the

Table 3 Impact of ascites on the daily life activities walking and shopping and the correlation to reported symptoms

	Sig.	Odds Ratio	Lower 95% CI	Upper 95% CI
(a) Walking				
Ascites vol > 2l	0.029	19.28	1.34	275.92
General reported symptoms	0.024	13.24	1.40	124.57
Dyspnea	0.04	31.13	1.17	828.27
Weakness	0.037	12.74	1.16	140.02
(b) Shoping				
Ascites vol > 2l	0.086			
Dyspnea	0.071	32.10	0.73	1394.02
General reported symptoms	0.023	123.83	1.92	7983.30
Weakness	0.021	84.07	1.96	3591.61

Analysis shows significant influence on walking (a) and shopping (b) if patients report general symptoms, dyspnea and weakness

patients, MA was already found at the first medical consultation due to acute symptoms like abdominal tension. An intervention like MA drainage led to a satisfying relief of the symptoms; however, two-third of the patients reported a recurrence of discomfort due to MA.

Despite the fact that malignant ascites can influence substantially the quality of life of the patients, only few studies address this issue. At this point, there is only one published trial regarding quality of life scores in cancer patients with MA with several tumor types, including ovarian and gastric cancer, comparing paracentesis plus catumaxomab with paracentesis alone [17]. In this study, the punction-free survival was defined as the primary objective. Patients were divided into two groups answering the EORTC QLQ-C30 questionnaire dealing with QoL in cancer patients with MA. In conclusion, the decrease in the QoL score was more rapid in the group of patients receiving paracentesis alone compared to the second group who received catumaxomab in addition. Our questionnaire was developed to identity the patient´s expectations and preferences not to measure the QoL of the patients. Compared to our questionnaire, in this trial, the EORTC QLQ-C30 form was used which is not specifically dealing with QoL in patients with malignant ascites but cancer in general. Therefore, the questions also do not aim to identify the actual influence of MA in patients' everyday life. Our trial has shown that malignant ascites has a special significance for cancer patients. As shown in Fig. 1, the symptoms with the highest impact on the deterioration of QoL were abdominal tension (35.2%) and general activity/mobility disabilities (37.1%). Also, more than half of the patients felt instant and satisfying relief of the symptoms after paracentesis of MA (52.6%).

The EORTC QLQ-C30 only asks the patients in general about their overall quality of life during the past week. However, our focus laid on the importance of MA during daily life and we were able to demonstrate that patients reported a significant influence of MA on everyday activities like eating, drinking, sexual activity, walking, shopping and personal hygiene/body care.

In addition, our trial showed that the patients' source of knowledge about MA differed widely (Table 2). Most of the patients learned about MA from their medical oncologist or gynecologist (30.4% vs. 25.6%). The Internet was also a commonly used medium for research (20.8%). These data implicate that we need to improve the communication and exchange of information to explain MA and its consequences better to the patients.

Limitations

Overall, 125 patients were included in the present trial and completely fulfilled the questionnaire. To get a better impression of the patient's quality of life with MA, a larger number of patients would have been preferable/ helpful. During our trial, 250 questionnaires were sent by mail from which or were given directly to the patients during consultation. The response rate was 50%. This is in the range of other surveys in this setting but nevertheless limits our interpretation to all patients with malignant ascites. Furthermore, patients have been asked once at various times of the disease. Serial individual interviews may provide additional information and changes in the patient's perspectives. This should be addressed in future trials/surveys.

Conclusion

Malignant ascites has a significantly impact on the quality of life in cancer patients. It influences everyday activities including basic needs like eating, walking and body care. There is a high need for more information and education of patients with malignant ascites.

Author contribution RA project development, data collection, data analysis, manuscript writing/editing. CN project development, data collection, manuscript writing/editing. PT-P project development, data collection. DL project development, data collection. HR project development, data collection. KP project development, data analysis. GO-Ö project development, data collection. RR project development, data collection, data analysis. MK project development, data analysis, manuscript writing/editing. JS project development, data collection, data analysis, manuscript writing/editing.

Compliance with ethical standards

Conflict of interest The authors state that there is no conflict of interest.

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