

Quality of Life of Patients with Ovarian Cancer

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1. Introduction

1.1 Current status of ovarian cancer

Ovarian cancer is one of the leading female cancers around the world (International Agency for Research on Cancer, 2011). Up to now, there is no effective method of early detection (US Task Force of Preventive Services, 2011). When detected, the stages are usually advanced, and patients have poor prognosis and poor health-related quality of life (HRQoL). Patient-reported outcomes have been recommended as endpoints of clinical trials by the U.S. Food and Drug Administration (FDA) (2011). Therefore, besides improving survival, a better HRQoL is a major goal for the development of methods for new detection and treatments.

1.2 The impacts of the disease

Patients with ovarian cancer share general functioning and systemic problems with patients with other cancers (Cella et al., 1993; Cain et al., 1998; Base-Enquist et al., 2001; Aaronson et al., 1993). Regarding disease-specific problems, abdominal / gastrointestinal symptoms because of the space-occupying nature of the tumor and the malignant ascites from the tumor in the pelvic and abdominal cavity are most important issues (Cain et al., 1998; Base-Enquist et al., 2001; Cull et al., 2001; Greimel et al., 2003a, 2003b). The disease recurs easily. Patients may suffer repeating debulking surgeries and chemotherapies that affect their HRQoL.

1.3 The impacts of the treatments

The standard treatment of this disease is debulking (cytoreduction) surgery followed by platinum-based chemotherapy (du Bois et al., 2005), while a new approach of neoadjuvant chemotherapy followed by debulking surgery (Brisow & Chi, 2006). These treatments, no matter which comes first, can improve survival and improve HRQoL of patients by reducing tumor size and ascites, and also patients' psychological distress. But they may also have negative impacts on HRQoL of patients because of the adverse effects of chemotherapy and surgery.

1.4 Other important aspects of HRQoL

The life-threatening nature of the illness can also cause psychological distress (Cull et al., 2001; Greimel et al., 2003a, 2003b). As all other gynecological cancers, patients with ovarian

cancer suffer from body image concerns and problems in sexual life (Cain et al., 1998; Base-Enquist et al., 2001; Cull et al., 2001; Greimel et al., 2003a, 2003b).

2. Domains of HRQoL affected by disease and treatments of ovarian cancer

2.1 Disease-related problems

2.1.1 General functioning and systemic symptoms

General functioning including physical, emotional, social, etc. (Cella et al., 1993; Aaronson et al., 1993) and ability of getting around (independence) are major issues in this category (Cain et al., 1998; Base-Enquist et al., 2001). Weight loss is also seen as a disease-related systemic symptom for advanced tumor (Cain et al., 1998; Base-Enquist et al., 2001).

2.1.2 Abdominal (gastrointestinal) symptoms

Abdominal (gastrointestinal) symptoms are major disease-related HRQoL problems of patients with ovarian cancer. These symptoms may include abdominal swelling, fullness, pain or cramps, indigestion, change of bowel habit, etc. Abdominal pain and bowel habit change can also arise from treatment (Cain et al., 1998; Base-Enquist et al., 2001; Cull et al., 2001; Greimel et al., 2003a, 2003b).

2.2. Treatment-related problems

2.2.1 Urological and gynecological symptoms

The urological or gynecological symptoms are not as common as other gynecological cancers, and they are usually caused by treatment. Urinary frequency and dry vagina are often complained of (Cull et al., 2001; Greimel et al., 2003a, 2003b).

2.2.2 Chemotherapy side effects

Chemotherapy can cause nausea and vomiting, poor appetite (Cella et al., 1993; Cain et al., 1998; Base-Enquist et al., 2001; Aaronson et al., 1993), hair loss (Cain et al., 1998; Base-Enquist et al., 2001; Cull et al., 2001; Greimel et al., 2003a, 2003b), peripheral neuropathy including numbness and weakness, other sensory change, skin problems and muscle pain (Cull et al., 2001; Greimel et al., 2003a, 2003b). Urinary frequency can also be attributed to chemotherapy (Cull et al., 2001; Greimel et al., 2003a, 2003b).

2.2.3 Termination of reproductive ability and menopausal symptoms

For women of reproductive age, both surgical treatment and chemotherapy can cause early menopause and the termination of reproductive ability (Cain et al., 1998; Base-Enquist et al., 2001). Menopausal symptoms caused by hormonal depletion, including hot flush (flash) and night sweats, are also experienced by these patients (Cull et al., 2001; Greimel et al., 2003a, 2003b).

2.3 Other important aspects in HRQoL

2.3.1 Body image and psychological problems

Like all other gynecological cancer, ovarian cancer per se and its treatment can cause body image and psychological problems. For the body image problems, patients may feel less attractive, less like a woman, dissatisfied with body or appearance, etc. (Cain et al., 1998; Base-Enquist et al., 2001; Cull et al., 2001; Greimel et al., 2003a, 2003b). For the psychological

problem, patients may have negative emotions (Cella et al., 1993; Aaronson et al., 1993), or suffer from burdens of and worries about disease or treatment (Cull et al., 2001; Greimel et al., 2003a, 2003b).

2.3.2 Sexuality

Like all other gynecological cancers, sexuality is negatively affected. Issues include interest in sex, real sexual activity and enjoyment (Cain et al., 1998; Base-Enquist et al., 2001; Cull et al., 2001; Greimel et al., 2003a, 2003b). Dry vagina during intercourse, a result of hormonal depletion, can also be classified in this category (Cull et al., 2001; Greimel et al., 2003a, 2003b).

3. Existing instruments for assessment of HRQoL

We have at present two systems of disease-specific instruments for assessment of HRQoL of patients with ovarian cancer: the Functional Assessment of Cancer Therapy (FACT) and the European Organisation for Research and Treatment of Cancer (EORTC). Both have a generic core questionnaire, the FACT-G and the EORTC QLQ-C30, and a disease-specific supplementary questionnaire, the FACT-O and the EORTC QLQ-OV28.

3.1 The FACT system: FACT-G and FACT-O

3.1.1 The scale structure of the FACT system

The FACT-G was developed as a general measure for HRQoL of patients with cancer in 1987 (Cella et al., 1993) and validated in patients with different cancers before the development of ovarian specific scale (Weitzner et al., 1995; Cella, 1995; List et al., 1996; Brady et al., 1997; Esper et al., 1997; Yellen et al., 1997; McQuellon et al., 1997; Ward et al., 1999). The instrument contains four domains and 27 questions: physical well-being (PWB), 7 questions; social / family well-being (SWB), 7 questions; emotional well-being (EWB), 6 questions; and functional well-being (FWB), 7 questions (Cella et al., 1993). Each question has 5 options: 0 (not at all), 1 (a little bit), 3 (quite a bit), and 4 (very much). All item scores are recoded to make a high score corresponding to better HRQoL. It can be seen either as a disease-specific instrument vs. other diseases or a generic instrument for all patients with cancer. An ovarian cancer-specific subscale (OCS) was developed in 1998 using the same option format (Cain et al., 1998) and was reported to have good reliability and validity in 2001 (Base-Enquist et al., 2001). The questionnaire contains one domain, originally 12 questions: stomach swelling, losing weight, vomiting, hair loss, stomach cramping, and concerns about fertility (negative questions); bowel control, good appetite, appearance, getting around, feel like a woman, and interested in sex (positive questions, reverse coded). One question (concerns about fertility) was deleted because most patients are beyond childbearing age. The two instruments are used together when assessing HRQoL of patients with ovarian cancer. The score of each scale is a summation of recoded question scores within each scale. The total score is a summation of all scores of all 38 (27 and 11) questions together.

3.1.2 Reliability and validity of the FACT system in patients with ovarian cancer

Reliability and validity of the FACT-O with FACT-G were reported by Base-Enquist et al. (2001). The internal consistency (Cronbach's alpha) coefficient of the 11 questions in FACT-O was 0.92, and test-retest correlation coefficient of the total FACT-O score was 0.81. The correlation coefficients between the total FACT-O score, subscale scores of FACT-G, and

subscale scores of other related instruments were as expected (good convergent and divergent validity). The scores of subscales of the FACT-G and the total FACT-O score were significantly different in different performance and treatment status, and were sensitive to changes of performance status. According to the validation results, the FACT-O is a reliable and valid instrument used with the FACT-G in assessment of ovarian cancer-specific HRQoL as a whole for patients with ovarian cancer.

3.2 The EORTC system: QLQ-C30 and QLQ-OV28

3.2.1 The scale structure of the EORTC system

The development of the EORTC QLQ-C30 can be traced back in 1986. The questionnaire was designed for the measurement of general HRQoL issued for patients with cancer (Aaronson et al., 1993). It can also be seen either as a disease-specific instrument vs. other diseases or a generic instrument for all patients with cancer. The questionnaire contains 30 questions belonging to five functional scales (physical, role, emotional, social, and cognitive), nine symptom scales (fatigue, nausea and vomiting, pain, dyspnea, sleep disturbance, appetite loss, constipation, and diarrhea), financial difficulty in the past week, and one global health status (overall health and quality of life) scale. Each question has 4 options: 1 (not at all), 2 (a little), 3 (quite a bit), and 4 (very much). Each scale is scored separately. There is no total score. All scale scores are transformed into 0-100 from a recoded summation of item scores in each scale. For all functional scales, a higher score represents a better HRQoL. For all symptom scales and financial difficulty, a higher score means a poorer HRQoL. Previous studies showed good reliability and validity for different cancer diagnoses (Bjordal & Kaasa, 1992; Aaronson et al., 1993; Hjermstad et al., 1995; Groenvold et al., 1997; Kobayashi et al., 1998).

The EORTC QLQ-OV28 was designed as a supplement to the EORTC QLQ-C30 for the use in ovarian cancer clinical trials and related studies (Cull et al., 2001; Greimel et al., 2003a, 2003b). It contains seven subscales and 28 questions - abdominal / gastrointestinal symptoms (7 questions: abdominal pain, feeling bloated, clothes too tight, changed bowel habit, flatulence, fullness when eating, indigestion), peripheral neuropathy (4 questions: tingling, numbness, and weakness), other chemotherapy side-effects (7 questions: hair loss and upset by hair loss, taste change, muscle pain, hearing problem, urinary frequency, and skin problem), hormonal / menopausal (2 questions: hot flushes and night sweat), body image (2 questions: less attractive, dissatisfied with body), attitude to disease and treatment (3 questions: disease burden, treatment burden, and worry about future), and sexual function (4 questions: interest in sex, sexual activity, enjoyment of sex, and dry vagina). Each scale is scored separately as that of the EORTC QLQ-C30. For symptom scales, a higher score means a poorer HRQoL. For function scales (body image and sexual function), a higher score represent a better HRQoL. In addition to the cross-cultural validation of the EORTC, Chie et al. (2010) reported the translation and validation of the EORTC QLQ-OV28 in Taiwan and found a relatively low importance of body image, menopausal, and sexuality problems because of low emphasis on attractiveness and avoidance of sexual activity after having cancer.

3.2.2 Reliability and validity of the EORTC system in patients with ovarian cancer

Greimel et al. (2003b) reported the result of cross-cultural validation of the EORTC QLQ-OV28 used with the EORTC QLQ-C30. The internal consistency (Cronbach's alpha) coefficients of all subscales except body image (0.58) were above 0.70 (ranging from 0.77 to

0.90). There was no scaling error except the subscale of other chemotherapy side effects (5/42). The intraclass correlation coefficients for test-retest of all subscales ranged from 0.74 to 0.94. The correlation coefficients between subscales of the EORTC QLQ-OV28 and EORTC QLQ-C30 were as expected. For responsiveness, scores of abdominal symptoms, peripheral neuropathy, other chemotherapy side effects, and disease burden responded significantly after treatment. For sensitivity (known-groups comparison), subscale scores differed most significantly between patients with primary and recurrent tumors. According to the validation report, the EORTC QLQ-OV28 is a reliable and valid multi-dimensional instrument used with the EORTC QLQ-C30 for the assessment of HRQoL of multiple aspects for patients with ovarian cancer.

3.3 Comparison of scale structures of the two systems

The comparison of the two sets of instruments is shown in Tables 1 and 2. The functional scales of the FACT-G and the EORTC QLQ-C30 are similar. Both include physical, mental or emotional, social, and role or functional subscales. The FACT-G emphasizes familial functioning, while the EORTC QLQ-C30 includes cognitive functioning. Both have an overall measure for HRQoL: the FACT-G uses a summation of all scores, while the EORTC QLQ-C30 measures it separately. The EORTC QLQ-C30 also has symptom and financial difficulty subscales. The FACT-G includes some symptoms in physical or function subscales (Table 1). The contents of the FACT-O and the EORTC QLQ-OV28 are similar. However, the FACT-O has only one overall scale for ovarian cancer, while the EORTC QLQ-OV28 has seven subscales covering problems of different organ-systems or aspects of HRQoL (Table 2).

| FACT | | EORTC | |
|----------------------|---|--|---|
| Physical | Energy Nausea Family needs Pain Side effects Feel ill Bed-ridden | Physical | Strenuous activity Long walk Short walk Stay in chair Self-care |
| Social/family | Close to friends Family support Friends' support Family comm. illness Close to partner Sexual life | Social | Interfere with family life With social activities |
| Emotional | Feel sad Satisfied with coping Losing hope Feel nervous Worry / dying Worry / getting worse | Emotional Cognitive | Tense Worry Irritable Depressed Concentration Remembering |

| FACT | | EORTC | |
|-----------------------|---|----------------|--|
| Functional | Able to work Work fulfilling Enjoy life Sleep well Enjoy pleasure Content with QOL | Role | Limited work Limited leisure |
| Symptoms | | Overall | Health QOL Pain, Fatigue, Nausea & vomiting Dyspnea, Sleep, Appetite, constipation, diarrhea |
| Other scale(s) | | | Financial difficulty |

Table 1. Comparison of FACT-G and the EORTC QLQ-C30.

| FACT | EORTC | |
|---|--|--|
| FACT-O (one scale) Stomach swelling, losing weight, bowel control, vomiting, hair loss, good appetite, appearance, getting around, feel like a woman, stomach cramping, interested in sex, concerns about fertility (deleted) | GI symptoms | Abdominal pain, Feeling bloated, Clothes tight, Changed bowel habit, Flatulence, Fullness when eating, Indigestion |
| | Peripheral neuropathy | Tingling, Numbness, Weakness |
| | Other chemotherapy side effects | Hair loss & upset, Taste change, Muscle pain, Hearing problem, Urinary frequency, Skin problem |
| | Attitude to disease | Disease burden, Treatment burden, Worry about future |
| | Sexual function | Interest in sex, Sexual activity, Sex enjoyment, Dry vagina |

Table 2. Comparison of FACT-O and the EORTC QLQ-OV28.

4. Equivalence of the FACT and the EORTC systems

Are the results of the two systems equivalent? Hozner et al. (2006) reported a study on 737 patients with different cancers for the equivalence of the FACT-G and the EORTC QLQ-C30, the core content of the two systems. Both classical test theory and Rasch measurement model were used. Three of the four subscales common to the two systems are equating: physical, emotional, and role / functional, but not the social / family subscale. A converting table was generated according to the results. No such study was conducted for the FACT-O and the EORTC QLQ-OV28 because the FACT-O has only one subscale, therefore the two site-specific questionnaires have no common subscales to study.

5. Application of two systems in assessing HRQoL of patients with ovarian cancer undergoing different treatments across different cultures

5.1 The application of the FACT system

The two systems of instruments measuring HRQoL of patients with ovarian cancer were used in clinical trials and non-trial clinical studies. The FACT system was more widely used because the FACT-O was developed earlier than the EORTC QLQ-OV28. The FACT-O has been applied in studies assessing palliative chemotherapy for advanced ovarian cancer (using EORTC QLQ-C30 and FACT-O) (Doyle et al., 2001), general chemotherapy (Le et al., 2004), adjuvant and salvage chemotherapy for advanced ovarian cancer (Le et al., 2005), interval cytoreduction in advanced ovarian cancer (Wenzel et al., 2005), active coping (Canada et al., 2006), Thalidomide therapy (Gordinier et al., 2007), phase I/II gemcitabine and doxorubicin (Goff et al., 2003) and phase II gemcitabine and topotecan trials for platinum-refractory ovarian cancers (Goff et al., 2008), and factors for decreased QoL (von Gruenigen et al., 2009). In summary, the FACT-O and FACT-G scores became better when there was response to treatment, active coping can improve HRQoL, and factors causing decreased HRQoL can be detected and managed in advance.

5.2 The application of the EORTC system

The use of the EORTC QLQ-OV28 with the EORTC QLQ-C30 was less common because it was developed later than the FACT-O. The two questionnaires were first used in a study assessing HRQoL for patients after pelvic exenteration in 2004 (Roos et al., 2004) where more physical, social, and sexual problems, especially for young patients were reported after surgery. A comparison of HRQoL of patients with early vs. advanced ovarian cancer (Mirabeau-Beale et al., 2009) found comparable HRQoL in two groups. A clinical trial of neoadjuvant platinum-based chemotherapy followed by (interval) debulking surgery vs. standard care of primary debulking surgery followed by platinum-based chemotherapy in stage IIIc or IV ovarian cancer used the two questionnaires did not detect any difference between the two arms in HRQoL (Vergote et al., 2010). The EORTC QLQ-C30 alone without the EORTC QLQ-OV28 has been used in a randomized trial of cisplatin / paclitaxel vs. carboplatin / paclitaxel and found patients undergoing carboplatin / paclitaxel treatment had better HRQoL (Greimel et al., 2006). Another study using the EORTC QLQ-C30 assessing the HRQoL of long-term survivors of ovarian cancer found long-term survivors had better HRQoL scores before treatment than short-term survivors, and long-term survivors had significant improvement of HRQoL in emotional and global health scores 1 year after treatment and remained stable. The scores of all domains but dyspnea were comparable with women without cancer (Greimel et al., 2011).

5.3 A comparison of the two systems in HRQoL assessment

A review article in 2010 commented after comparing all generic and specific questionnaires for HRQoL of patients with gynecologic cancers that there is little evidence that disease-, symptom- or treatment-specific instruments are more responsive or sensitive than generic or cancer-specific questionnaires, and a superior quality and quantity data reported for the FACT system compared with the EORTC system (Luckett et al., 2010). Nordin and Greimel on behalf of the EORTC Quality of Life Gynecology Group (2010) responded in a letter that such comments are not substantiated and provided examples of good results of cross-cultural validation. In addition to the cross-cultural nature, the multi-dimensional structure of the EORTC system may also help clinical researchers and practitioners conduct more detailed assessment of different aspects of HRQoL of patients.

6. Future development

Ovarian cancer is an important gynecological cancer which affects the survival and HRQoL of patients (International Agency for Research on Cancer, 2011). The keys to improve both survival and HRQoL are methods of early detection (US Task Force of Preventive Services, 2011) and effective treatment (du Bois et al., 2005; Brisow & Chi, 2006). We expect breakthroughs in both early detection and effective treatment in the near future. Patient-reported outcomes have been recommended as endpoints of clinical trials by the U.S. Food and Drug Administration (FDA) (2011). To evaluate the effectiveness of these methods, HRQoL is an essential primary endpoint. Two systems of HRQoL assessment, i.e. the FACT and the EORTC systems are available. Both cover major issues of HRQoL and show good reliability and validity in previous reports and are used widely around the world in clinical trials and clinical studies. Therefore, we expect that the assessment of HRQoL of patients can be routinely included in clinical researches and practice, to understand and further improve patients' HRQoL.

7. Conclusions

Ovarian cancer is one of the leading female cancers around the world. There is no effective method of early detection. When detected, the stages are usually advanced, and patients have poor health-related quality of life (HRQoL). The standard treatments of this disease including debulking surgery and chemotherapy can improve survival and may have either positive or negative impacts on HRQoL of patients. The disease recurs easily. Patients may suffer repeating debulking surgeries and chemotherapies that affect their HRQoL. In this chapter, we introduced and reviewed the scale structures, psychometric properties and clinical validities of existing instruments – the FACT system and the EORTC system for the assessment of HRQoL for patients with ovarian cancer, and report the results of their application in clinical trials and observational studies. We hope that HRQoL can be emphasized and routinely assessed for all patients with ovarian cancer in future clinical researches and practice.

8. References

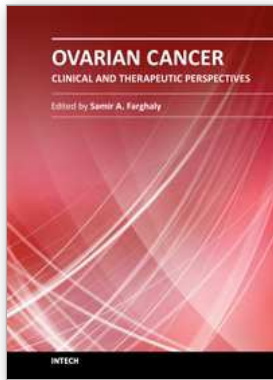
Aaronson NK, Ahmedzai A, Berman B, et al. (1993). The European Organization for Research and Treatment of Cancer QLQ-C30: a quality-of-life instrument for use in

- international clinical trials in oncology. *Journal of the National Cancer Institute* Vol.85, No.3, (March 1993), pp. 365-376, ISSN 0027-8874.
- Basen-Enquist K, Bodurka-Bevers D, Fitzderald MA, et al. (2001). Reliability and validity of the Functional Assessment of Cancer Therapy-Ovarian. *Journal of Clinical Oncology* Vol.19, No.6, (March 2001), pp. 1809-1817, ISSN 0732-183X.
- Bjordal K, Kaasa S. (1992). Psychometric validation of the EROTC Core Quality of Life Questionnaire, 30-item version and a diagnosis-specific module for head and neck cancer patients. *Acta Oncologica* Vol.31, No.3, (March 1992), pp. 311-321, ISSN 0284-186X.
- Brady MJ, Cella DF, Mo F, et al. (1997). Reliability and validity of the Functional Assessment of Cancer Therapy-Breast quality-of-life instrument. *Journal of Clinical Oncology* Vol.15, No.3, (March 1997), pp.974-986, 1809-1817, ISSN 0732-183X.
- Brisow RE, Chi DS. (2006). Platinum-based neoadjuvant chemotherapy and interval surgical cytoreduction for advanced ovarian cancer: a meta-analysis. *Gynecologic Oncology* Vol.103, No.3, (December 2006), pp.1070-1076, ISSN 0090-8258.
- Cain JM, Wenzel LB, Monk BJ, et al. (1998). Palliative care and quality of life considerations in the management of ovarian cancer. In: *Ovarian cancer-controversies in management*. Gershenson DM, McGuire WP (eds). New York, NY, Churchill Livingstone, pp 281-307, ISBN 978-0443078040.
- Canada AL, Parker PA, de Moor JS, et al. (2006). Active coping mediates the association between religion / spirituality and quality of life in ovarian cancer. *Gynecologic Oncology* Vol.101, No.1 (April 2006), pp. 102-107, ISSN 0090-8258.
- Cella D, Tulsy DS, Gray G, et al. (1993). The Functional Assessment of Cancer Therapy Scale: development and validation of the general measure. *Journal of Clinical Oncology* Vol.11, No.4, (April 1993), pp. 570-579, ISSN 0732-183X.
- Cella DF. (1995). Reliability and validity of the Functional Assessment of Cancer Therapy-Lung (FACT-L) quality of life instrument. *Lung Cancer* Vol.12, No.3, (June 1995), pp.199-220, ISSN 0169-5002.
- Chie WC, Lan CY, Chiang C, Chen CA. (2010). Quality of life of patients with ovarian cancer in taiwan: validation and application of the Taiwan Chinese version of the EORTC QLQ-OV28, brief report. *Psycho-Oncology* Vol.19, No.7, (July 2010), pp. 782-785, ISSN 1099-1611.
- Cull A, Howat S, Greimel E, et al. (2001). Development of a European Organisation for Research and Treatment of Cancer questionnaire module to assess the quality of life of ovarian cancer patients in clinical trials: a progress report. *European Journal of Cancer* Vol.37, No.1, (January 2001), pp. 47-53, ISSN 0959-8049.
- Doyle C, Crump M, Pintile M, Oza AM. (2001). Does palliative chemotherapy palliate? Evaluation of expectation, outcomes, and cost in women receiving chemotherapy for advanced ovarian cancer. *Journal of Clinical Oncology* Vol.19, No.6, (February 2001), pp. 1266-1274, ISSN 0732-183X.
- du Bois A, Quinn M, Thigpen T, et al. (2005). 2004 Consensus Statements on the management of ovarian cancer: final document of the 3rd International Gynecologic Cancer Intergroup Ovarian cancer Consensus conference (GCIC CCCC 2004). *Ann Oncol* Vol.16, No.suppl 8, (October 2005), pp.ivvv7-ivvv12, ISSN 0923-7534.

- Esper P, Mo F, Chodak G, et al. (1997). Measuring quality of life in men with prostate cancer using the Functional Assessment of Cancer Therapy-Prostate instrument. *Urology* Vol.50, No.6, (December 1997), pp. 920-928. ISSN 0090-4295.
- Goff BA, Thompson T, Greer BE, Jacobs A, Storer B. (2003). Treatment of recurrent platinum-resistant ovarian or peritoneal cancer with gemcitabine and doxorubicin. A phase I/II trial of the the Puget Sound Oncology Consortium. *American Journal of Obstetrics and Gynecology* Vol.188, No.6. (June 2003), pp. 1556-1564, ISSN 0002-9378.
- Goff BA, Holmberg LA, Veljovich D, Kurland BF. (2008). Treat of recurrent or persistent platinum-refractory ovarian, fallopian tube, or primary peritoneal cancer with gemcitabine and topotecan. A phase II trial of the Puget Sound Oncology Consortium. *Gynecologic Oncology* Vol.110, No.2, (August 2008), pp. 146-151, ISSN 0090-8258.
- Gordinier ME, Dizon DS, Weitzen S, et al. (2007). Oral thalidomide as palliative chemotherapy in women with advanced ovarian cancer. *Journal of Palliative Medicine* Vol.10, No.1, (February 2007), pp. 61-65, ISSN 1096-6218.
- Greimel ER, Bottomley A, Cull A, et al. (2003a). An international field study of the reliability and validity of a disease-specific questionnaire module (the QLQ-OV28) in assessing the quality of life of patients with ovarian cancer. *European Journal of Cancer* Vol.39, No.10, (July 2003), pp.1402-1408, ISSN 0959-8049.
- Greimel ER, Bottomley A, Cull A, et al. (2003b). Cooridgendum to "An international field study of the reliability and validity of a disease-specific questionnaire module (the QLQ-OV28) in assessing the quality of life of patients with ovarian cancer": [European Journal of Cancer 39: 1402-1408.]. *European Journal of Cancer* Vol.39, No.17, (November 2003), pp. 2570, ISSN 0959-8049.
- Greimel E, Bjelic-Radisic V, Pfisterer J. et al. (2006). Randomised study of the Arbeitsgemeinschaft Gynaekologische Onkologie Ovarian Cancer Study Group comparing quality of life in patients with ovarian cancer treated with cisplatin/paclitaxel versus carboplatin/paclitaxel. *Journal of Clinical Oncology* Vol.24, No.4, (February 2006), pp.579-585, ISSN 0732-183X.
- Greimel E, Daghofer F Petru E. (2011). Prospective assessment of quality of life in long-term ovarian cancer survivors. *International Journal of Cancer* Vol.128, No.12 (June 2011), pp. 3005-3011, ISSN 1097-0215.
- Groenvold, M, Klee MC, Sprangers MAG, Aaronson NK. (1997). Validation of the EORTC QLQ-C30 quality of life questionnaire through combined qualitative and quantitative assessment of patient-observer agreement. *Journal of Clinical Epidemiology* Vol.50, No.4, (April 1997), pp. 441-450, ISSN 0895-4356.
- Hjermstad MJ, Fossa SD, Bjordal K, Kaasa S. (1995). Test/retest study of the European Organization for Research and Treatment of Cancer Core Quality-of-Life Questionnaire. *Journal of Clinical Oncology* Vol.13, No.5, (May 1995), pp. 1249-1254, ISSN 0732-183X.
- Hozner B, Bode RK, Hahn EA, et al. (2006). Equating EORTC QLQ-C30 and FACT-G scores and its use in oncological research. *European Journal of Cancer* Vol.42, No.18, (December 2006), pp. 3169-3177, ISSN 0959-8049.
- International Agency for Research on Cancer. (2011). Available from <http://globocan.iarc.fr/factsheets/populations/factsheet.asp?uno=900#WOMEN>

- Kobayashi K, Takeda F, Teramukai S, et al. (1998). A cross-validation of the European Organization for Research and Treatment of Cancer QLQ-C30 (EORTC QLQ-C30) for Japanese with lung cancer. *European Journal of Cancer* Vol.34, No.6, (May 1998), pp. 810-815, ISSN 0959-8049.
- Le T, Leis A, Pahwa P, et al. (2004). Quality of life evaluation in patients with ovarian cancer during chemotherapy treatment. *Gynecologic Oncology* Vol.92, No.3, (March 2004), pp. 839-844, ISSN 0090-8258.
- Le T, Hopkins L, Fung MFK. (2005). Quality of life assessment during adjuvant and salvage chemotherapy for advance stage epithelial ovarian cancer. *Gynecologic Oncology* Vol.98, No.1, (July 2005), pp. 39-44, ISSN 0090-8258.
- List MA, D'Antonio LL, Cella DF, et al. (1996). The Performance Status Scale for head and neck cancer patients and the Functional Assessment of Cancer Therapy -Head and Neck Scale. *Cancer* Vol.77, No.11, (June 1996), pp.2294-2301, ISSN 1097-0142.
- Luckett T, King M, Butow P. et al. (2010). Assessing health-related quality of life in gynecologic oncology. A systematic review of questionnaires and their ability to detect clinically important difference and change. *International Journal of Gynecological Cancer* Vol.20, No.4, (May 2010), pp. 664-684, ISSN 1525-1438.
- McQuellon RP, Russell GB, Cella DF, et al. (1997). Quality of life measurement in bone marrow transplantation: development of the Functional Assessment of Cancer Therapy-Bone Marrow Transplant (FACT-BMT) scale. *Bone Marrow Transplantation* Vol.19, No.4, (February 1997), pp. 357-368, ISSN 0268-3369.
- Mirabeau-Beale KL, Kornblith AB, Penson T, et al. (2009). Comparison of the quality of life of early and advanced stage ovarian cancer survivors. *Gynecologic Oncology* Vol.114, No.2, (August 2009), pp. 353-359, ISSN 0090-8258.
- Nordin AJ, Greimel E on behalf of the EORTC Quality of Life Gynecology Group. (2010). Assessing health-related quality of life in gynecologic oncology (letter). *International Journal of Gynecological Cancer* Vol.20, No.8, (November 2010), p. 1301, ISSN 1525-1438.
- Roos EJ, de Graeff A, van Eijkeren MA, Boon TA, Heintz APM. (2004). Quality of life after pelvic extenteration. *Gynecologic Oncology* Vol.93, No.3, (June 2004), pp. 610-614, ISSN 0090-8258.
- U.S. Food and Drug Administration. (July 2011). Available from <http://www.fda.gov/Drugs/GuidanceComplianceRegulatoryInformation/Guidances/default.htm>
- The US Task force of preventive services. (July 2011). Available from <http://www.uspreventiveservicestaskforce.org/uspstf/uspsovar.htm>
- Vergote I, Trope CG, Amant F, et al. (2010). Neoadjuvant chemotherapy or primary surgery in stage IIIc or IV ovarian cancer. *New England Journal of Medicine* Vol.363, No.10, (September 2010), pp.943-953, ISSN 0028-4793.
- von Gruenigen VE, Huang HQ, Gil KM, et al. (2009). Assessment of factors that contribute to decreased quality of life in Gynecologic Oncology Group ovarian cancer trials. *Cancer* Vol.115, No.20, (October 2009), pp. 4857-4864, ISSN 1097-0142.
- Ward WL, Hahn EA, Mo F, et al. (1999). Reliability and validity of the Functional Assessment of Cancer Therapy-Colorectal (FACT-C) Scale quality of life instrument. *Quality of Life Research* Vol. 8, No.3, (May 1999), pp.181-195, ISSN 0962-9343.

- Weitzner MA, Meyers CA, Gelke CK, et al. (1995). The Functional Assessment of Cancer Therapy (FACT) Scale: development of a brain subscale and revalidation of the general version (FACT-G) in patients with primary brain tumors. *Cancer* Vol.75, No.5, (March 1995), pp. 1151-1161, ISSN 1097-0142.
- Wenzel L, Huang HQ, Monk BJ, Rose PG, Cella D. (2005). Quality of life comparison in a randomized controlled trial of interval secondary cytoreduction in advanced ovarian carcinoma: a Gynecologic Oncology Group study. *Journal of Clinical Oncology* Vol.23, No.24, (August 2005), pp. 5605-5612, ISSN 0732-183X.
- Yellen SB, Cella DF, Webster K, et al. (1997). Measuring fatigue and other anemia-related symptoms with the Functional Assessment of Cancer Therapy (FACT) measurement system. *Journal of Pain and Symptom Management* Vol.13, No.2 (February 1997), pp. 63-74, ISSN 0885-3924.



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Worldwide, Ovarian carcinoma continues to be responsible for more deaths than all other gynecologic malignancies combined. International leaders in the field address the critical biologic and basic science issues relevant to the disease. The book details the molecular biological aspects of ovarian cancer. It provides molecular biology techniques of understanding this cancer. The techniques are designed to determine tumor genetics, expression, and protein function, and to elucidate the genetic mechanisms by which gene and immunotherapies may be perfected. It provides an analysis of current research into aspects of malignant transformation, growth control, and metastasis. A comprehensive spectrum of topics is covered providing up to date information on scientific discoveries and management considerations.

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