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The impact of hospital type on the efficacy of chemotherapy treatment in ovarian cancer patients ☆

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ABSTRACT

Objective. The hospital type affects the surgical outcomes of ovarian cancer patients. In the present study, we wanted to investigate the effect of hospital type on chemotherapy efficacy.

Methods. Data were collected from 1077 ovarian cancer patients treated from 1996 to 2003 in a random sample of 18 Dutch hospitals. Hospitals were categorized by the number of medical oncologists working in a hospital and additionally by chemotherapy volume (≤100, 101–200, or >200 patients yearly) and ovarian cancer patient-volume (≤6, 7–12, >12 yearly).
The outcomes were the proportions of patients achieving complete remission, recurrence rates, and disease-free and overall survival. Data were analyzed using multivariable logistic regression (complete remission and recurrence) and Cox regression (survival).

Results. Data of 761 of the 777 patients who received chemotherapy could be analyzed. Hospital type did not affect the complete remission rates, recurrence rates, or the disease-free survival. Overall survival was better in hospitals with 2 or more medical oncologists and in hospitals with a high ovarian cancer patient-volume (hazard ratios both 0.8 (95% confidence interval = 0.7–1.0)).

Conclusions. Thus, hospital type did not influence the outcomes of first-line chemotherapy in ovarian cancer patients. However, overall survival was better in hospitals with 2 or more medical oncologists and in hospitals with a high ovarian cancer patient-volume, suggesting differences in second-line chemotherapy.

Introduction

Ovarian cancer is the most lethal gynecologic malignancy. Besides surgical staging or debulking of the tumor, platinum-based chemotherapy is the mainstay of optimal treatment.

Patients treated in specialized hospitals were found to have higher survival rates [1–4]. One of the explanations is that surgery by specialized gynecologists (gynecologic oncologists) leads to better treatment outcomes [5–7]. In addition, differences in chemotherapy administration (e.g. choice and duration of chemotherapy) may also contribute to the differences in survival [1–4], but data on the exact role of the physician or the team providing chemotherapy are scarce. Recently, it was shown that patients who received chemotherapy from a medical oncologist had similar survival to patients who received chemotherapy from a gynecologic oncologist [8]. However, in many countries, chemotherapy is only provided by medical oncologists. To our knowledge, there are no studies on the effect of the size and the experience of the medical oncologist team on chemotherapy efficacy.

In the Netherlands, the incidence of ovarian cancer is about 1100 patients per year and almost all of the 105 Dutch hospitals provide care to ovarian cancer patients, including chemotherapy by registered medical oncologists. Recently, we found that ovarian cancer patients survived longer if they were treated in semi-specialized and specialized centers [9] and that gynecologists with a higher level of specialization and surgical volume more often achieved adequate staging and optimal debulking [10]. It thus seems warranted that surgery is performed by these gynecologists. However, we do not know if it is also necessary to refer ovarian cancer patients for chemotherapy. Referral often implies that patients have to travel further, and in case of chemotherapy treatment, this can be burdensome because the patient has to travel more often and for a longer period of time. On the other hand, if there would be differences in survival, this effort may be well worth it.

We hypothesized that treatment by a team of medical oncologists would result in higher efficacy of chemotherapy because the experience of all the team members can be employed in making treatment decisions. In addition, if there are more medical oncologists in a hospital, a higher volume of oncology patients can be treated,

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providing the opportunity for the individual members of the team to gain more experience in treatment of certain types of cancer, and thereby to subspecialize.

Thus, the primary objective of the present study was to investigate whether the number of medical oncologists working in a hospital influenced the proportion of patients achieving complete remission, the recurrence rates, and disease-free and overall survival of ovarian cancer patients. Furthermore, we investigated whether the experience in providing chemotherapy in general and in treating ovarian cancer patients in particular affected the outcomes of chemotherapy.

Methods

Design and study population

We performed a retrospective cohort study on ovarian carcinoma patients newly diagnosed between 1996 and 2003 in the Netherlands. Using SPSS, a random sample was drawn from hospitals with different levels of specialization in gynecologic oncology (Fig. 1). Specialized hospitals were tertiary referral centers with a gynecologic oncologist, semi-specialized hospitals were community (mostly teaching) hospitals with a semi-specialized gynecologist (who did not have a formal training but a long-term experience in oncology), and nonspecialized or general hospitals were community (non-teaching) hospitals without (semi-)specialized oncologic care. Information was collected from patient records in this sample of 18 Dutch hospitals.

Excluded patients were those with borderline and non-epithelial tumors, whose tumors were diagnosed post-mortem, or in whom the origin of the tumor was unknown and uncertain. Having a second malignancy, either before or after diagnosis of ovarian cancer, was no reason for exclusion. Patients were categorized according to the hospital where the chemotherapy was administered.

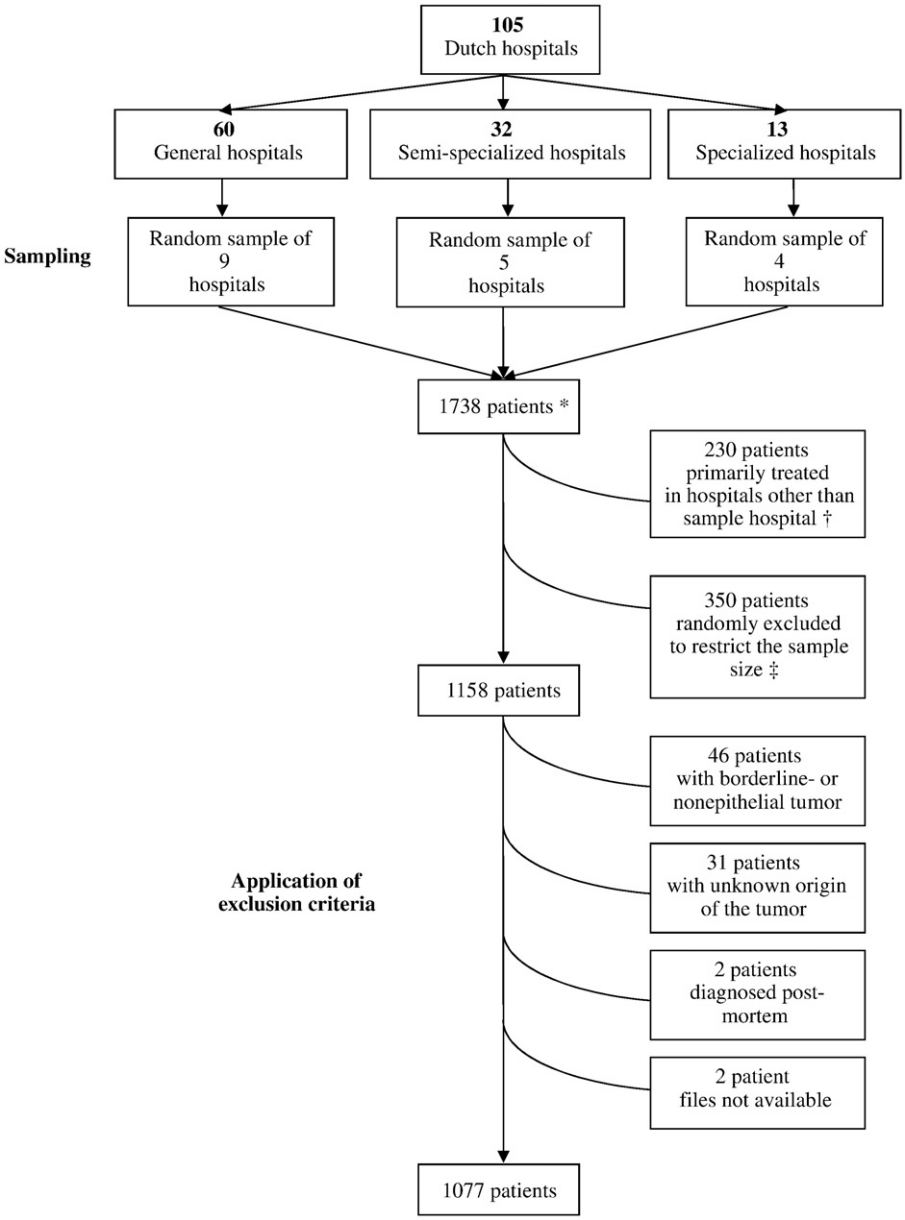

Fig. 1. Flow diagram of sampling and patient selection. * Identified in the Cancer Registry. For efficiency reasons we included: † patients primarily treated in sample hospitals; patients primarily treated in another hospital than the sample hospital were excluded. ‡ Maximally 85 or 65 (randomly sampled) patients per specialized or other hospital, respectively.