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Five-year and 10-year overall survival and disease-free survival in patients with ovarian cancer: A single-center observational study

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Abstract

Introduction: Survival from ovarian cancer is close to 50%; however, it varies depending on the different prognostic factors, the main one being the extent of the disease at diagnosis. The objective of this study was to establish overall and disease-free survival in a reference center for the treatment of ovarian cancer in Quito, Ecuador.

Methods: The present longitudinal study was carried out at the Metropolitan Hospital of Quito from January 2008 to December 2018. Women with ovarian cancer were included. Demographic variables, number of pregnancies, comorbidities, histological diagnosis, evolution time, treatment received, disease stage, progression, relapses, disease-free period, and mortality were recorded. The sample was non-probabilistic. A descriptive analysis and a survival analysis are performed.

Results: 84 patients participated. Age in 20 cases (23.8%) <50 years, in 29 cases (34.5%) from 50 to 59 years, and in 35 patients (41.7%) >60 years. 60.7% with 1 to 3 pregnancies, 23.8% never got pregnant, and 15.5% with > 4 pregnancies without relation to mortality. The most prevalent histological type was epithelial carcinoma in 56 cases (66.6%). The mean time to relapse was 56.8 months, and the survival time was 87.7 months. Survival at five years was 62%, and at ten years, 55%. Survival was lower in those over 60 years of age and with stages IIB, IIC, IIIA, and IIIC.

Conclusion: In this study, mortality was modified by the clinical stage, the time of evolution, and the age of the patients with ovarian cancer.

Keywords:

MESH: Ovarian Neoplasms; Mortality Registries; Survivorship; Progression-Free Survival, Survival Analysis.

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Introduction

Survival from ovarian cancer is close to 50%; however, it varies depending on the different prognostic factors, the main one being the extent of the disease at diagnosis [1]. A study by the International Federation of Gynecology and Obstetrics (FIGO, 2016) determined that the survival of patients in stage 1 to 5 years is 90%; in stage II, it is 65 to 70%; and in stage III, it is 20 to 30 % [2]. Additionally, survival is affected by the age and general health of the patient, by the feasibility that it can be completely removed during surgery, and if the neoplasia has just been diagnosed or has recurred [3].

Interval surgery is practiced after the administration of three or four cycles of neoadjuvant or primary chemotherapy because optimal initial cytoreduction is considered unlikely. The results of one study showed that overall survival in patients with interval surgery was not inferior to that with optimal primary cytoreduction (relative risk: 0.98; 90% confidence interval: 0.84 – 1.13; P = 0.01*)*. The neoadjuvant group had fewer complications (postoperative mortality, bleeding, and infection) [4].

At the regional level, there are no reports of long-term survival, so the objective of the present investigation was to establish overall and disease-free survival in a reference center for the treatment of ovarian cancer in Quito, Ecuador.

Materials and methods

Study design

The present study is longitudinal. The source is retrospective.

Scenery

The study was conducted in the Department of Gynecology and Obstetrics of the Metropolitan Hospital of Quito, Ecuador. The study period was from January 1, 2008, to December 31, 2018.

Participants

Older patients diagnosed with ovarian cancer were included. Cases with incomplete data were removed for analysis. Patients without histopathological reports were excluded.

Variables

The variables were: age, ethnicity, occupation, marital status, number of pregnancies, comorbidities, menarche, menopause, hormonal treatments, family history of ovarian cancer, ultrasound diagnosis, histological diagnosis, age at disease onset, recovery, evolution time, treatment received, disease stage, progression, relapses, disease-free period, and mortality.

Data sources/measurements

The source was indirect; reviews of medical records were carried out in the Department of Statistics and the electronic file (GEMA Platform). The information was treated confidentially; no personal data was included to identify the study subjects.

Biases

To avoid possible interviewer, information, and memory biases, the principal investigator kept the data at all times with a guide and records approved in the research protocol. Observation

and selection bias was avoided by applying the participant selection criteria. All the clinical and paraclinical variables of the period above were recorded. Two researchers independently analyzed each record in duplicate, and the variables were recorded in the database once their concordance was verified.

Study size

The sample was non-probabilistic, census type, where all possible cases of the study period were included.

Quantitative variables

Descriptive and inferential statistics were used. The results were expressed on a scale of means and standard deviation. Categorical data are presented in proportions.

Statistic analysis

Non-inferential and inferential statistics are used. For the descriptive analysis, measures of central tendency and dispersion were calculated according to the measurement scale of each variable. Qualitative variables are presented with absolute numbers and percentages; quantitative variables with median and standard deviation.

Inferential analysis: a survival analysis using the Kaplan-Meier method is presented, and the survival graphs will be compared using the Log-Rank test. The statistical significance level was $P < 0.05$. The statistical package used was SPSS 25.0 (IBM Corp. Released 2017. IBM SPSS Statistics for Windows, Version 25.0. Armonk, NY: IBM Corp).

Results

Participants

84 patients of mixed ethnicity participated in the study.

General characteristics of the sample

The age in 20 cases (23.8%) was less than 50 years; in 29 patients (34.5%), it was from 50 to 59 years; and in 35 cases (41.7%), aged 60 and over. The average age of women with stage I was 57.09 years; in stage II, it was 54.3 years; in stage III, it was 60.7 years. The employment situation of the patients was mainly a housewife, with a percentage of 17.9%, followed by employment in private institutions, with 11.9%. 60.7% of the cases had 1 to 3 pregnancies, 23.8% had never been pregnant, and 15.5% had more than four pregnancies.

The most prevalent histological type was epithelial carcinoma in 56 cases, germinal in 4 patients, clear cell in 3 cases, endometrioid in 3 cases, undifferentiated in 1 case, mucinous in 1 case, and other varieties in 12 cases.

In 92% of the cases, they received chemotherapy, and 8% were not treated for multiple reasons, such as a death in the operating room, did not continue treatment at the Metropolitan Hospital, did not have private medical insurance, being referred to the IESS and early stage of the disease in which he was diagnosed. 100% of patients had staging surgery, 90.4% had

staging surgery plus cytoreduction, and 9.5% had interval surgery after receiving six cycles of chemotherapy.

Disease stage and survival

The highest percentage of patients presented with stage IIA and IIIA (Figure 1). Figure 2 shows that the survival percentage decreases significantly from location IIC, with 40% of patients surviving with this diagnosis, and in stage IIIB, there were no patients who survived.

Figure 1. Clinical stage of patients with ovarian cancer.

Figure 2. Overall survival by stages in patients with ovarian cancer.

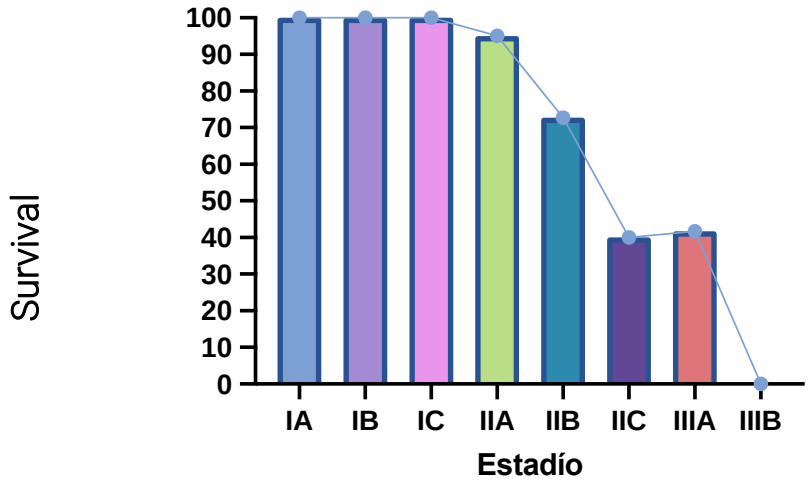


Figure 3 (upper line) describes the percentage of patients who had relapses up to the end of the study, so 59% of patients relapsed at five years and 91% at ten years. The lower line represents mortality; the percentage of patients who die in a period of 10 years is observed, 37.9%; that is, 31.8 patients died at five years (60 months), and 49%, 41.1 patients at ten years (120 months). Mortality is associated with age, being higher in women over 60 years of age, of

which a 63-year-old patient had controlled hypertension as a pre-existing disease, and the other 68-year-old patient had equally controlled hypothyroidism (Table 1).

The mean time to relapse was 56.8 months, with a 95% confidence interval ranging from 46.2 to 67.4 months. The mean survival time was 87.7 months, with a 95% confidence interval ranging from 74 to 101 months; it was also observed that survival at 60 months (5 years) was 62% and at 120 months. (10 years) was 55% (Figure 4).

Figure 3 . Overall survival by stages in patients with ovarian cancer.

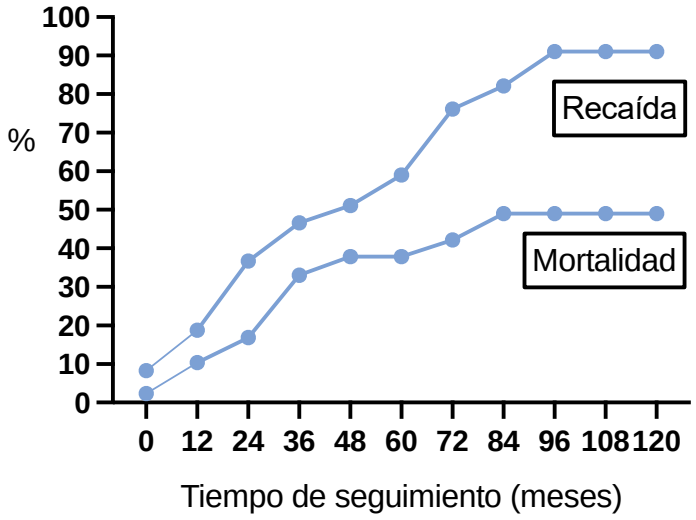
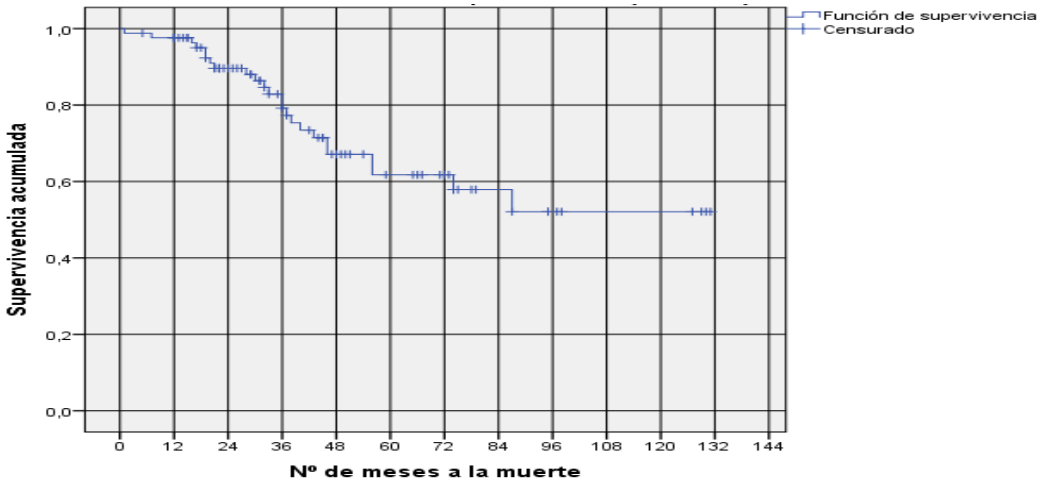


Table 1. Mortality by age.

	Dead n=24	Alive n=60	Total
Less than 50 years	0 (0%)	20 (33.3%)	20 (23.8%)
50 to 59 years	8 (33.3%)	21 (35%)	29 (34.5%)
60 and over	16 (66.7%)	19 (31.7%)	35 (41.7%)

Figure 4 . Survival analysis (Kaplan Meier) in patients diagnosed with ovarian cancer.



Discussion

The age of the patients diagnosed with ovarian cancer ranged from 22 to 84 years, with a mean value of 56.5 years and a standard error of the mean of 1.4, with a 95% confidence interval ranging from 53.7. at 59.3 years. Among this, the predominant age group was women between 30.7 and 82.3 years, with a standard deviation of 12.9 years, according to what was described [5] when referring to the fact that it is a more frequent pathology in this age group.

The older, the greater the number of patients who die after being diagnosed with ovarian cancer, being more prevalent after 50 years of age [6], in this study, it was observed that patients under 50 years of age did not die, while those between 50 and 59 years the percentage of deaths was 33.3% and over 60 years was 66.7%. It was also observed that the number of fatalities was directly associated with the presence or not of relapses, so 51.2% of deaths were present in patients with relapses. In comparison, only 4.9% died without having a regression with a $P<0.001$.

Regarding the stage of diagnosis, it has been described that the greater the extent of the disease, the higher the death rate [6]; in the present study, it was observed that the patients who presented stage IIIB had a mortality rate of 100%. The location of the disease is known to be the most important prognostic factor.

It has been reported that multiparity is considered a protective factor for ovarian cancer [7]; however, in the study, we found that multiparity was not a protective factor, we had 60.7%, that is, 51 patients who had up to 3 pregnancies and however, they were diagnosed with ovarian cancer.

Late menopause is considered in patients older than 52 years as a risk factor for ovarian cancer [8]; it has been observed that from the age of 40, each year that passes without menstruation increases from 2 to 7% of the risk of developing ovarian cancer, the study shows that 8.3%, that is, seven patients had a late menopause.

Ovarian cancer is the seventh most common cancer in women worldwide; systematic treatment has been combination chemotherapy or a single drug (Advanced ovarian cancer trialists group, 2007) [9]. In the present study, it was observed that 92 % of patients received chemotherapy after being diagnosed with ovarian cancer.

Regarding disease-free survival, it was observed that 41% of patients were disease-free at five years, while at ten years, this figure decreased remarkably, reaching 9%. Finally, it was observed that 59% of the Patients died within five years of their ovarian cancer diagnosis, and 91% died within ten years of their diagnosis.

Conclusions

The overall survival of patients diagnosed with ovarian cancer at 5 was 62.10%, and at ten years, it was 51%. Regarding the disease-free period, the percentage was 41% at five years and 9% at ten years. It was observed that the diagnosis of ovarian cancer mainly was in patients over 60 years of age, in whom higher mortality was also evidenced.

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Abbreviations

AHT: arterial hypertension.

Administrative information

Additional Files

None declared by the authors.

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Author contributions

Micaela Alejandra Navarrete Rengel: Conceptualization, formal analysis, research, project administration, writing of the original draft.
Jimmy Ronald Casares Tamayo: Conceptualization, supervision, validation, visualization, writing - revision and edition.
Rommel Espinoza De Los Monteros: Conceptualization, methodology, validation, visualization, writing - review and edition.
All authors read and approved the final version of the manuscript.

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Availability of data and materials

Data is available upon request to the corresponding author. No other materials are reported.

Statements

Ethics committee approval

Not required for observational studies.

Consent for publication

It is not required when images, resonances, or tomographic studies of specific patients are not published.

Conflicts of interest

The authors declare that they have no conflict of competence or interest.

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