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Overall survival in elderly patients with colorectal cancer: A population-based study in the Caribbean

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ABSTRACT

Background: Population-based Cancer registries (PBCR) play an important role in cancer surveillance and research. The aim of this study was to examine overall survival in elderly patients with colorectal cancer (CRC) by analysing data from the Martinique PBCR between 1993 and 2012.
Methods: The log-rank test was used to assess the statistical differences of the survival curves by each categorical variable: age at diagnosis, sex, histology, zone of residence, subsite, stage at diagnosis, and chemotherapy. A multivariable Cox model was performed to identify independent prognostic factors for overall survival in elderly patients with colorectal cancer.
Results: Among 2230 patients included in the study, 60.8% were aged ≥ 65 years; mean age at diagnosis of these patients was 75.7 ± 7.2 years. For the period 2008–2012, 532 elderly patients were analysed; mean age of those receiving chemotherapy was 73.0 ± 0.4 versus 77.9 ± 0.4 years for those not receiving chemotherapy ($p < 0.0001$). Stage at diagnosis was evaluated in 87.8% (467/532) of patients; 63.0% (294/467) had stage III–IV and 49.3% of these patients (145/294) received chemotherapy. Chemotherapy was less frequently prescribed in patients aged 75–84 and ≥85 years as compared to those aged 65–74 years (41.1% and 15.0% versus 64.6% respectively; $p < 0.0001$). Stage III–IV at diagnosis (HR = 5.25; 3.70–7.45; $p < 0.0001$), and not receiving chemotherapy (HR = 3.05; 2.23–4.16; $p < 0.0001$), were independent prognostic factors for overall survival.
Conclusion: Our study highlights the role of PBCR in evaluating cancer survival and patterns of care in elderly people of the French West- Indies. Chemotherapy was less frequently prescribed among the elderly

1. Introduction

Cancer Registries have an important role in cancer control strategies to prioritize cancer surveillance and cancer research strategies across the world. Population-based cancer registration represents the gold standard for cancer incidence and cancer mortality, to analyse possible risk factors for cancer and to evaluate the impact of cancer control activities [1].

The Martinique Region (1128 km^2–381,326 inhabitants in 2014) is located in the French West-Indies, Caribbean. The population-based cancer registry (PBCR) of Martinique has been participating in epidemiological surveillance and evaluation of cancer since 1981, through the analysis of incidence and mortality data over time. The Registry also contributes to the implementation of public health studies to evaluate public health risks as a tool for epidemiological surveillance, and as a decision-making aid for local and national public health authorities.

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Colorectal cancer (CRC) was the third most common cancer in men (746,000 cases) and the second most common in women (614,000 cases) worldwide in 2012 [2,3]. There is a high incidence of CRC in France (23,226 cases for men and 8926 cases for women in 2012) with world-standardized incidence rates of 38.4/100,000 and 23.7/100,000 respectively in men and women. With a median age at diagnosis of 71 years in men and 75 in women, this cancer is a major public health concern for elderly patients [4]. In view of the increasing population of patients older than 65 years, this cancer is also on the increase in most countries, with geographical variation around the world [3].

In France, the number of new cases of cancer in patients aged ≥ 65 years was estimated to be 233,343 (61% of all cancers) in 2015, and 51.6% of cancers occurred in men. A total of 11% of cancers occurred in patients aged over 85 years. The most common cancers were prostate cancer, colorectal cancer and lung cancer in men, and in women, breast cancer, colorectal cancer and lung cancer [5,6].

In the Caribbean, most data available on CRC management and incidence are provided by countries with PBCR: Jamaica, Barbados, Puerto-Rico, Cuba, Guadeloupe and Martinique [7–15]. International comparison of survival trends reveals wide differences that are likely attributable to differences in access to early diagnosis and optimal treatment [16]. In Martinique, CRC has an incidence of 25.7/100,000 and 22.0/100,000 respectively in men and women; this cancer is the second most common after prostate and breast with a median age at diagnosis of 69.0 years for both sexes [15]. In recent decades, research efforts have focused on strengthening and coordinating cancer surveillance efforts. In France, a national strategic plan for cancer has been established for the period 2014–2019. This cancer control plan includes assessment of cancer disparities and patterns of care in elderly patients [17]. In this context, we decided to study cancer survival disparities in the elderly. The aim of this study was therefore to examine overall survival in elderly patients with CRC by analysing data from the Martinique population-based cancer registry between 1993 and 2012.

2. Methods

2.1. Population and design

This retrospective population-based study included all incident patients with invasive colorectal cancer diagnosed in Martinique between 01/01/1993 and 31/12/2012. Data were recorded in the PBCR database of Martinique in strict conformity with the international standards laid down by the International Agency for Research on Cancer (IARC), the French FRANCIM network, and the European Network of Cancer Registries (ENCR). Registry procedures were approved by the French National authority for the protection of privacy and personal data.

2.2. Data collection

Data were extracted anonymously using the International Classification of Diseases version 10 (ICD-10) codes and the International Classification of Diseases for Oncology [18]. Population data were available from the French census bureau for the study period.

The definition of “elderly” frequently varies from patients > 65 years to patients > 75 years of age [19]. In our study, the characteristics of elderly CRC patients were analysed according to age subgroups, namely: 65–74 years, 75–84 years and over 85 years.

We recorded the following socio-demographic data and clinical variables: year of diagnosis, age at diagnosis, sex, histology, zone of residence and subsite of the cancer. The different subsites recorded were as follows: colon (C18.00–C18.80); and rectum (C19.90, C20.90).

For the years 2008–2012, stage at diagnosis (localized: stage I–II, regional: stage III and metastatic stage: stage IV) and chemotherapy were also analysed. These variables are routinely included in the Registry database since 2008 and were analysed only for the 2008–2012 period.

2.3. Statistical analysis

Patient characteristics are described as mean (± standard deviation) for quantitative variables, and as number (percentage) for qualitative variables. Comparisons were performed using the Student t or Chi square tests, as appropriate. For all analyses, a p value <0.05 was considered statistically significant. We measured survival as the time from the date of diagnosis until the date of death, regardless of the cause, or loss to follow-up, or censoring on 31st December 2013. Survival was estimated using the Kaplan-Meier method. The log-rank test was used to assess the statistical differences of the observed survival curves by each categorical variable: gender, subsite, age groups, geographical zone, stage at diagnosis and chemotherapy. A multivariable Cox model was performed to identify independent prognostic factors for overall survival. Variables with a p-value < 0.20 in the univariate analysis were included in the multivariable analysis. All analyses were performed using SAS version 9.2. (SAS Institute Inc., Cary, NC, USA).

2.4. Ethical aspects

According to French legislation, cancer data were previously rendered anonymous with codes. The Martinique cancer registry database was approved by the French National authority for the protection of privacy and personal data (Commission Nationale Informatique et Libertés, CNIL N° 987 001). Additional approval from ethical committees was not required since our study did not involve direct patient contact.

3. Results

3.1. Patients characteristics

A total of 2230 cases of incident invasive CRC were included during the study period (1993–2012): 1171 were women (52.5%); 1588 patients (71.2%) had colon cancer. In total, the elderly cohort comprised 1356 CRC patients aged over 65 years old (60.8% of CRC patients), while there were 237 patients aged over 85 years (10.6% of all CRC patients).

For the purposes of analysis, the study period was divided into five-year periods between 1993 and 2012.

In the elderly cohort, mean age at diagnosis was 76.7± 7.4 years for the overall study period from 1993 to 2012, with 583 (43.0%), 536 (39.5%), and 237 (17.5%) patients aged 65–74 years, 75–84 years and ≥ 85 years, respectively. The mean age at diagnosis was 75.7 (±7.2) years in men and 77.0 (±7.5) years in women (p < 0.0001). Primary tumor site was the colon in 985 (72.6%) patients.

Table 1 summarizes the demographic characteristics, tumor location (colon or rectum), stage at diagnosis, and chemotherapy by age class.

During the most recent 5-year period (2008–2012), 171 (32.1%) had ≥ 1 line of chemotherapy among the 532 elderly CRC patients. Chemotherapy was administered in 58 patients ≥ 75 years, including six patients ≥ 85 years. Mean age of elderly CRC patients receiving chemotherapy was 73.0 ± 0.4 years versus 77.9 ±0.4 years in those who did not receive chemotherapy (p < 0.0001).