



Original Research

Adjuvant chemotherapy and relative survival of patients with stage II colon cancer – A EURECCA international comparison between the Netherlands, Denmark, Sweden, England, Ireland, Belgium, and Lithuania



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Received 13 February 2016; received in revised form 14 April 2016; accepted 20 April 2016

KEYWORDS

Colon cancer;
Stage II;
Adjuvant
chemotherapy;
Surgery;

Abstract Background: The aim of the present EURECCA international comparison is to compare adjuvant chemotherapy and relative survival of patients with stage II colon cancer between European countries.

Methods: Population-based national cohort data (2004–2009) from the Netherlands (NL), Denmark (DK), Sweden (SE), England (ENG), Ireland (IE), and Belgium (BE) were obtained, as well as single-centre data from Lithuania. All surgically treated patients with stage II colon

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International
comparison;
Population-based

cancer were included. The proportion of patients receiving adjuvant chemotherapy was calculated and compared between countries. Besides, relative survival was calculated and compared between countries.

Results: Overall, 59,154 patients were included. The proportion of patients receiving adjuvant chemotherapy ranged from 7.1% to 29.0% ($p < 0.001$). Compared with NL, a better adjusted relative survival was observed in SE (stage II: relative excess risks (RER) 0.53, 95% confidence interval (CI) 0.44–0.64; $p < 0.001$), and BE (stage II: RER 0.84, 95% CI 0.76–0.92; $p < 0.001$), and in IE for patients with stage IIA disease (RER 0.80, 95% CI 0.65–0.98; $p = 0.03$).

Conclusion: The proportion of patients with stage II colon cancer receiving adjuvant chemotherapy varied largely between seven European countries. No clear linear pattern between adjuvant chemotherapy and adjusted relative survival was observed. Compared with NL, SE and BE showed an improved adjusted relative survival for stage II disease, and IE for patients with stage IIA disease only. Further research into selection criteria for adjuvant chemotherapy could eventually lead to individually tailored, optimal treatment of patients with stage II colon cancer.

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1. Introduction

Colorectal cancer is the third most common cancer in males and the second in females, and it is the second cause of cancer death in Europe. In total, 447,000 new cases and 215,000 deaths are estimated to have occurred in 2012 [1]. Approximately 70% of patients with colorectal cancer have a tumour in the colon [2]. Surgery is the mainstay curative treatment for colon cancer. Depending on stage, surgery may be followed by adjuvant chemotherapy with the aim of eradicating micrometastases.

The role of adjuvant chemotherapy in patients with stage III colon cancer is well established, resulting in a reduction in recurrence rate and an improvement in survival [3–9]. Nowadays, oxaliplatin combined with capecitabine or 5-fluorouracil (FU)/leucovorin (LV) is standard in the adjuvant treatment of stage III colon cancer [10–12].

On the contrary, the role of adjuvant chemotherapy in patients with stage II colon cancer remains uncertain despite several randomised controlled trials (RCTs) exploring this subject [13]. Currently about 15% of patients with stage II colon cancer will develop metastatic disease within 5 years after diagnosis of the primary tumour [14]. According to the ESMO Clinical Practice Guidelines, adjuvant chemotherapy could be considered in patients with high-risk stage II colon cancer defined as at least one of the following characteristics: poorly differentiated tumours, pT4 disease, vascular or lymphatic or perineural invasion, obstruction or perforation, and fewer than 12 lymph nodes sampled [12].

Previous studies have shown that colon cancer survival significantly varies across Europe, with the lowest relative survival in Eastern Europe [15,16]. These differences in relative survival might be partly attributable

to differences in patterns of care among European countries.

Although RCTs are considered to be the gold standard for evaluating the effectiveness of interventions, they are costly, time consuming, not always feasible, and importantly, results cannot be extrapolated to the general population [17]. Besides, RCTs in stage II colon cancer did not give conclusive evidence concerning the effectiveness of adjuvant chemotherapy so far. As an alternative, comparative effectiveness research with large, ideally population-based, datasets could provide clues for optimal treatment strategies.

The aim of the present EURECCA international comparison is to compare the use of adjuvant chemotherapy and to compare relative survival of patients with stage II colon cancer between European countries.

2. Patients and methods

2.1. Patients

National datasets from the Netherlands Cancer Registry (NL), the Danish Colorectal Cancer Group database (DK), the Swedish Colorectal Cancer Registry (SE), the English National Cancer Registration Service database Cancer Analysis System (ENG), the National Cancer Registry Ireland (IE), and the Belgian Cancer Registry (BE) were included. Moreover, we obtained single-centre data from the Hospital of Lithuanian University of Health Sciences Kaunas Clinics (LT).

We selected all patients with stage II colon cancer (ICD-10 C18), who were diagnosed between 2004 and 2009, except for patients from SE who were diagnosed between 2007 and 2009. All patients were surgically treated with curative intent.

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