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Interventions to prevent postoperative delirium in elderly cancer patients should be targeted at those undergoing nonsuperficial surgery with special attention to the cognitive impaired patients

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Abstract

Aims: The aim of this study was to determine risk factors for postoperative delirium (POD) in elderly cancer patients.
Methods: This study was an observational multicentre retrospective study performed in the University Medical Center Groningen and Medical Center Leeuwarden, the Netherlands. Patients over 65 years of age undergoing elective surgery for a solid tumour were included. The main outcome was POD. Medical records were screened for POD using a standardized instrument. The risk factors considered were: age, gender, severity of the surgical procedure, comorbidity, American Society of Anaesthesiologists (ASA) score and 15 items suggestive for frailty as measured with the Groningen Frailty Indicator (GFI). To examine an association between the risk factors and the development of POD, univariate and multivariate logistic regression analysis was performed to estimate odds ratios (ORs) and 95% confidence intervals (CIs).
Results: We reviewed 251 medical records. Forty-six patients developed POD (18.3%). Preoperative cognitive functioning (as measured by the item cognition of the GFI) (OR: 23.36; 95% CI: 5.33–102.36) and severity of the surgical procedure were identified as independent risk factors for POD; intermediate (OR: 15.44, 95% CI: 1.70–140.18) and major surgical procedures (OR: 45.01, 95% CI: 5.22–387.87) significantly increased the risk for POD as compared to minor surgery.
Conclusions: Preoperative cognitive functioning and the severity of the surgical procedure are independent risk factors for POD in elderly undergoing elective surgery for a solid tumour.

Keywords: Aged; Postoperative complications; Delirium; Risk factors; General surgery; Neoplasms

Introduction

Surgery is an essential part of the multimodality treatment of solid tumours. After surgery, postoperative delirium (POD) is a common and serious complication with incidences varying from less than 10% up to 50% depending on the type of surgery.[1–7] Delirium is associated with increased morbidity and mortality, persistent functional and cognitive decline, longer hospital stays, higher rates of nursing home placement

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and increased health-care costs.[6,8–11] Early identification of patients at risk for POD is the first step in possible prevention and optimization of care for this growing group of patients.

In the literature patient related risk factors for developing (postoperative) delirium are well described in orthopaedic-, general surgical-, thoracic surgical- and medical (elderly) populations. Although there is a substantial heterogeneity in the findings, it is evident that the occurrence of delirium increases with age and cognitive dysfunctioning is considered as the strongest independent risk factor. Additional risk factors concerning physical and mental functioning have been identified.[1,12] These factors include comorbidity, functional impairment, sensory impairment, medical illness, various biochemical abnormalities, malnutrition, male gender, mental disorder, previous delirium, psychotropic drug use and alcohol abuse. Variables related to the surgical procedure such as blood loss,[13] perioperative transfusion[6,14] and duration of the procedure[14] have also been associated with POD. However, to date no study has been performed on a specific elderly oncological surgical population investigating predictors of postoperative delirium.

The objective of this study was to investigate which perioperative risk factors were predictive for postoperative delirium (POD) in elderly patients undergoing a surgical procedure for a solid tumour.

Patients and methods

Design

This study was a retrospective chart review performed in the University Medical Center Groningen and Medical Center Leeuwarden, the Netherlands.

This study was a side study from the Liaison Intervention in Frail Elderly study (LIFE, Trial ID NTR 823). The LIFE study is a multicenter randomized controlled trial that was conducted between April 2007 and June 2010.[15] For this study, we recruited patients over 65 years of age undergoing surgery under general anaesthesia for a solid tumour at the outpatient's departments of general surgery, gynaecology, oral surgery and Ear, Nose and Throat medicine. We excluded patients undergoing surgery under local anaesthesia and patients with a benign tumour. A total of 911 patients were screened for frailty with the GFI, 270 were classified as frail and 641 were classified as non-frail. Frail was defined as GFI score greater than three[16] (Appendix 1). One hundred-and-ninety frail patients participated in the intervention study in which they were randomized to standard treatment versus a geriatric liaison intervention. The primary outcome was the incidence of postoperative delirium.

Patients included in the current analysis

In the here presented analysis, the eighty frail patients that did not participate in the intervention study were included and compared to a sample of non-frail patients (see Fig. 1). To compose the non-frail patients group for the current study, a sample of the screened non-frail patients ($n = 641$) was taken based on the proportion of non participating frail patients ($n = 80$) of the in total screened frail patients ($n = 270$): (80/270)*641 = 189 (Fig. 1).

Main outcome

Postoperative delirium

The chart-based instrument developed by Inouye et al. was used to screen for postoperative delirium in the medical

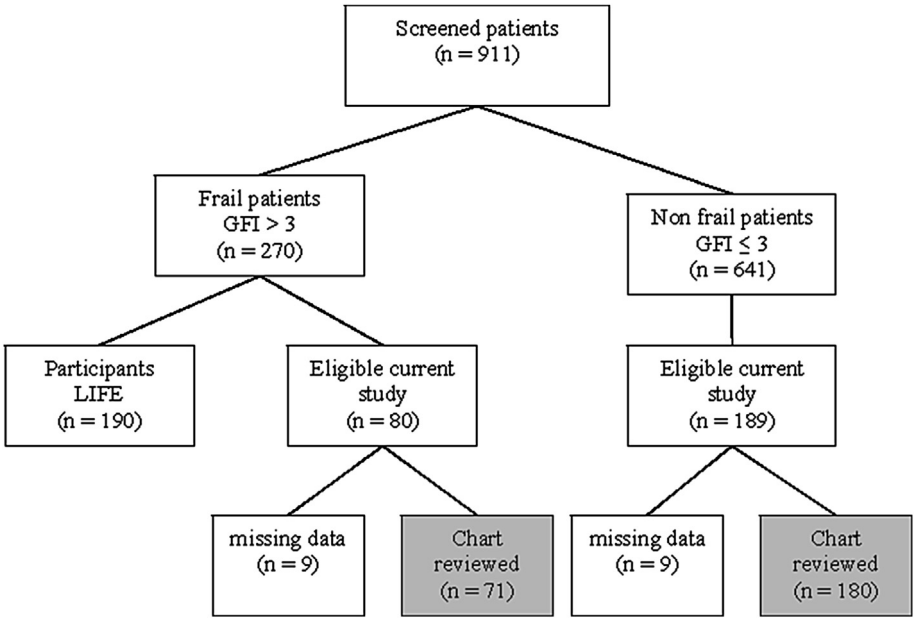

Figure 1. Flow chart of the study. Participants current investigation.