

A new clinically applicable age-specific comorbidity index based on self-reported information for preoperative risk assessment of ovarian cancer patients

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Background: Ovarian cancer is often diagnosed in women older than 65 years with one or more comorbidities. Comorbidity in cancer is associated with worse prognosis, higher demands on health resources and decreased quality of life. Despite extensive research within the field of comorbidity during the last three decades, it remains a major challenge to the health care system and to researchers. A fundamental challenge to researchers is how to identify and obtain a useful and clinical feasible measurement of the “comorbidity burden”. Most of the existing tools are rather complex and mainly used for research purposes. Introducing some simplicity would be beneficial in order to ensure routine assessment of comorbidity in a clinical setting

Hypothesis: Standard treatment for the majority of ovarian cancer patients is extensive surgery followed by adjuvant chemotherapy. Patients not fit for this aggressive treatment due to severe comorbidity and patients with macroscopic unresectable tumors may instead be offered neoadjuvant chemotherapy followed by debulking surgery. The aim of the present study is to develop and validate a new feasible comorbidity index suited specifically for preoperative risk assessment in ovarian cancer.

Methods: The study was based on patient self-reported data from ovarian cancer patients registered in the Danish Gynecological Cancer Database between January 1, 2005 and December 31, 2012. The study population was divided into a development cohort (n=2020) and a validation cohort (n=1975). Age-stratified multivariate Cox regression analyses were conducted to identify comorbidities significantly impacting five-year overall survival in the development cohort, and regression coefficients were used to construct a new weighted comorbidity index. The index was applied to the validation cohort, and its predictive ability in regard to overall and cancer-specific five-year-survival was investigated. Finally, the performance of the new index was compared to that of the Charlson Comorbidity Index which is the most often used comorbidity index at present.

Results: Regression coefficients of age and five comorbidities (atherosclerotic cardiac disease, chronic obstructive pulmonary disease, diabetes, dementia and hypertension) were included in the new comorbidity index. The validation study found the new index to be significantly associated to both overall survival (HR 1.44, (95%CI 1.01-1.92), $p=0.013$) and cancer-specific survival (HR 1.51 (95%CI 1.08-2.12), $p=0.017$) in multivariate analyses adjusted for other prognostic factors. The index significantly outperformed the Charlson Comorbidity Index in regard to its ability to predict both overall and cancer-specific survival. Conclusively, this new and simple age-specific comorbidity index based on self-reported comorbidity can be a useful tool for preoperative risk assessment in ovarian cancer patients and help in the decision-making to ensure individualized treatment.