

Identifying risk factors for imminent death in cancer patients with acute dyspnea.

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Abstract:

A substantial proportion of cancer patients presenting to an emergency center (EC) or clinic with acute dyspnea survives fewer than 2 weeks. If these patients could be identified at the time of admission, physicians and patients would have additional information on which to base decisions to continue therapy to extend life or to refocus treatment efforts on palliation and/or hospice care alone. The purpose of this study was to identify risk factors for imminent death (survival \leq 2 weeks) and short-term survival (1, 3, or 6 months) in cancer patients presenting to an EC with acute dyspnea and to combine these factors into a model to help clinicians identify patients with short life expectancies. A random sample of 122 patients presenting to an EC with acute dyspnea was selected for a retrospective analysis. Data that were available to physicians during the initial EC visit included patient histories, triage and discharge vital signs, chest radiographs, and laboratory results. These variables were used in univariate and logistic regression models to develop predictive models for imminent death and short-term survival. Variables and interactions meeting a univariate criterion of $P < 0.10$ were included in stepwise regression by using forward and backward stepping. Models were compared with the use of Hosmer-Lemeshow statistics and receiver operating characteristics curves. Underlying cancers were 30% breast, 37% lung, and 34% other cancers. Triage respiration greater than 28/min., triage pulse greater than or equal to 110 bpm, uncontrolled progressive disease, and history of metastasis were found to be statistically significant predictors ($\alpha \leq 0.05$) of imminent death. Patients with uncontrolled progressive disease had a relative risk of imminent death of 21.93. Relative risks for triage respiration, pulse, and metastases were 12.72, 4.92, and 3.85, respectively. Cancer diagnosis was not predictive of imminent death but was predictive when longer time periods were modeled. It may be possible to identify patients whose death is imminent from a group of cancer patients with acute dyspnea. Some factors that predict imminent death (triage pulse and respiration) differ from those (cancer diagnosis) that predict short-term survival. Extent of disease/response to treatment is common to all models. These factors need further examination and validation. If these findings are confirmed, this quantified information can help physicians in making difficult end-of-life decisions.

Comments:

Strengths/uniqueness: The authors attempted to determine an inception cohort of patient with advanced cancer by identifying subjects with acute dyspnea who were seen in the Emergency Department at a large tertiary cancer center. This choice appears reasonable according to the theory of the terminal cancer syndrome, which is characterized by dyspnea among other symptoms and signs. The authors also found the presence of lung cancer to be a bad prognostic factor for short term survival (i.e. 3 months) which is consistent with other studies.

Weakness: It is unclear if this is a representative sample (i.e. were these 122 patients similar to the 1100 patients who were admitted to the ER with acute dyspnea and advanced cancer, but not evaluated in this study?; what was the median survival of this sample?). The validity of this study is further limited by the lack of adjustment for other important prognostic factors in these patient populations (i.e. performance and cognitive status). The results of this study appear of limited relevance because of large 95% CI around the point estimates obtained from the multivariate logistic model. The applicability of the study findings remains unclear and limited at best to patients admitted to ER in USA hospitals with acute dyspnea.

Relevance to Palliative Care: There is always value in looking for survival predictors in advanced/terminal cancer patients