Re: 30-Day Mortality and Major Complications after Radical Prostatectomy: Influence of Age and Comorbidity

In a manuscript recently published by the Journal, Alibhai et al. (1) reported that increasing comorbidity was more strongly associated with early complications after radical prostatectomy than age in a Canadian population. They also observed that the risk of postoperative mortality after radical prostatectomy was relatively low for otherwise healthy men who were younger than 80 years of age. We evaluated this association among all patients (N = 4165) who underwent a radical prostatectomy in any hospital in Milan, Italy, from January 1, 1995, through May 31, 2005, who were reported in the Hospital Discharge Registry database. To assess vital status at 30 days after radical prostatectomy, we searched for all identified patients in the Milano Mortality Registry records between January 1, 1995, and June 30, 2005. The presence of comorbid conditions at hospital admission was ascertained using the methodology proposed by Elixhauser et al. (2). Each subject’s annual income, calculated as the median of incomes of the residents in each of the 6036 census tracts in Milan, was estimated by linking data in the Tax Register and in the Population Registry.

Among the 4165 men who underwent radical prostatectomy, 17 died within 30 days of surgery. Risk of death was statistically significantly associated with age: For each 10-year increase in age, an almost threefold increase in the risk of death was observed (odds ratio [OR] = 2.7; 95% confidence interval [CI] = 1.1 to 6.7). Adjusting for age, men with earnings in the lower two tertiles of the income distribution had a twofold excess risk of 30-day mortality compared with men with earnings in the top tertile; however, this association was not statistically significant.

Overall, comorbidity was associated with an increased risk of 30-day mortality (OR = 3.1; 95% CI = 1.2 to 8.2), with an almost fivefold increase in risk among patients with two or more comorbidities (OR = 4.8; 95% CI = 1.5 to 16.0). In the univariate approach, after adjusting for age and income, comorbidities that were associated with a statistically significant excess risk of 30-day mortality were congestive heart failure (OR = 50.5; 95% CI = 9.6 to 266.6), previous history of cancer (OR = 10.9; 95% CI = 3.9 to 29.9), and all deficiency anemia (OR = 31.5; 95% CI = 3.6 to 274.4). Multivariable logistic stepwise procedure (using age and personal income as fixed factors) showed associations between 30-day mortality and congestive heart failure (OR = 36.3; 95% CI = 5.6 to 236.6) and cancer (OR = 9.2; 95% CI = 3.2 to 26.5).

The frequency of death within 30 days of radical prostatectomy in our study (0.37%) was similar to that reported by Alibhai et al. (0.48%), suggesting that background risk in Italian men is similar to that observed in Canadian men. The proportion of men who are screened for prostate-specific antigen (PSA) is similar in North America and in Italy. Overall in Milan, 34% of men aged 50 years or older with no history of prostate cancer had at least one PSA test, and the overall PSA screening rate increased with age and ranged from 6.8% in men aged 40–49 years to 40.6% in men aged 70–79 years (3).

Our study supports the low prevalence of comorbidities in men who are selected to undergo radical prostatectomy and the increased risk of 30-day mortality associated with age reported by Alibhai et al. (1). We also found further quantitative evidence that having an increasing number of comorbidities is associated with an increased risk of death within 30 days of radical prostatectomy. An original finding of our study was that personal income may be associated with mortality within 30 days of radical prostatectomy, suggesting a complex interaction among age, income, and comorbidities.

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REFERENCES


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DOI: 10.1093/jnci/djj096

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RESPONSE

We thank Russo et al. for sharing the results of their analysis of 30-day mortality among more than 4000 men who underwent radical prostatectomy in Milan, Italy, during a 10-year period. Similar to our findings that were recently reported in the Journal, the authors found an increased risk of 30-day mortality with increasing age (odds ratio [OR] = 2.7). This estimate is similar to both our unadjusted (OR = 2.5, 95% confidence interval [CI] = 1.5 to 4.2) and adjusted (OR = 2.0, 95% CI = 1.2 to 3.4) risk estimates. We do not know whether the odds ratio reported for age by Russo et al. was unadjusted or adjusted.

Both our analysis and the data reported by Russo et al. suggest that cardiovascular disease (including coronary artery disease and congestive heart failure in our model and congestive heart failure only in the analysis by Russo et al.) is associated with 30-day mortality. Russo et al. do not report if they considered coronary artery disease separately. The wide confidence intervals around some of the estimates associated with comorbidity reported by Russo et al. suggest that few patients who underwent surgery had the conditions in question.

Although the possible associations between age, comorbidity, and income reported by Russo et al. are intriguing, the very small number of deaths that occurred (n = 17) severely constrains any multivariable modelling approaches. Indeed, in Russo et al.’s analysis, the association between income and mortality was not statistically significant. In our
own dataset, because of privacy and confidentiality issues, we did not have access to income measures, so we are unable to confirm or refute these associations. The preliminary findings of Russo et al. therefore need replication in larger datasets. If the income-mortality association is true, the next step would be to understand the mechanism(s) by which income might impact early surgical mortality.

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DOI: 10.1093/jnci/djj097
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