Women and Chronic Obstructive Pulmonary Disease: Does Sex Influence Survival?

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In recent years, chronic obstructive pulmonary disease (COPD) has become an increasing problem among women. In the United States, the absolute numbers of COPD cases, hospitalizations, and deaths among women have exceeded those among men (1). Similar trends have been observed in Canada (2), the United Kingdom (3), Finland (4), and other countries. This has occurred...
Despite evidence that physicians have historically been less likely to diagnose COPD in women compared with men (5). An important question is whether sex differences exist in the development, progression, and outcomes of COPD (6). These differences, if present, may provide valuable information on risk factors, treatment, and prognosis of COPD.

The increasing prevalence of COPD among women in the developed world is thought to be related to the historic increase in smoking among women in these populations. The question remains, however, whether women are intrinsically more likely to develop COPD than men, with some evidence suggesting that they are, but other evidence indicating that they are not (7, 8).

A separate question is whether the prognosis of COPD varies between men and women. In population-based samples, women live longer than men (9). Whether this is true among people with COPD is not completely clear. In a recent review of the topic, Chapman concluded, “There are documented differences in health care use between men and women who have COPD, but too few studies have been done to allow conclusions to be drawn about the impact of sex and gender on the prognosis of the disease” (10).

The article by Machado and colleagues in this issue of the Journal (pp. 524–529) (11) found that women with COPD who were oxygen-dependent died more quickly than men. After adjusting for covariates, the risk of death among women increased. The initial question one must ask in evaluating a study is whether the findings are real and if they make sense. In this case, there were several inclusion and exclusion criteria for the study. The inclusion criteria were an FEV1/FVC less than 0.70 and treatment with long-term oxygen therapy. Patients who met these criteria but who died within 6 months of starting oxygen were excluded. Current smokers (either by self-report or physician judgment) were not included because they were not eligible for long-term oxygen therapy. We don’t know whether the decision-making processes to place patients on oxygen were similar between men and women. We also do not know whether a similar proportion of men and women dropped out or died within 6 months, thus not qualifying for the study. If the population excluded by these criteria was similar for men and women then it is of interest that the women in the study were significantly younger than the men, suggesting that women treated for COPD in this hospital had developed COPD at an earlier age than men.

A second potential bias in the study is that adherence to treatment may have been different between men and women. The observed survival difference could be seen if women were less likely to use their oxygen as prescribed than men. A recent review of 164 studies of adherence to medical therapy did not detect a sex difference (12), making this explanation less likely, although still possible.

If the findings of this study are real and represent a true difference in COPD outcomes between men and women, then it is important to understand why these differences are occurring and whether they might be amenable to an intervention. One explanation for worse survival among women might be that some of the systemic complications of COPD, such as the muscle dysfunction or depression, are more common in women and that these lead to worse outcomes. In two recently published studies of patients with COPD, women had almost three times the prevalence of depression as men (38 vs. 13%) (13) and twice the prevalence of fat-free body mass depletion (40 vs. 20%) (14). While we do not know whether these complications were increased in the Machado and colleagues’ study, it is plausible that the observed differences may have been related to these or other COPD-related complications that differ between sexes.

Does sex influence survival in COPD? This is still an open question. The study published in this issue of the Journal suggests that women with COPD who are on oxygen may die more quickly than men (11). Whether this observation holds true in other cohorts with differing severity of COPD is yet to be determined. Careful analysis from both clinical data and observational trials will shed more light on this important question and, it is hoped, provide guidance for how to better intervene in the care of our patients with COPD.

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