COMMENTARY

Bronchoscopic lung volume decrease improved survival in COPD patients.

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ABSTRACT

Patients with severe COPD can benefit greatly from Bronchoscopic Lung Volume Reduction (BLVR) therapies using coils or endobronchial valves. The possible influence of BLVR on survival, on on the other hand, is less well recognized. As a result, our goal was to look at the survival rate in patients who are being considered for BLVR therapy and whether there is a difference in survival rate between patients who receive BLVR treatment and those who do not.

Key Words: *Bronchoscopic lung volume reduction.*

INTRODUCTION

Bronchoscopic Lung Volume Reduction (BLVR) utilizing lung volume reduction coils or Endobronchial Valves (EBV) has become the standard of care. Both therapies attempt to lower hyperinflated lung volumes in patients with Chronic Obstructive Pulmonary Disease (COPD), and have demonstrated considerable benefit in terms of improved pulmonary function, lung volumes, exercise capacity, and quality of life. However, nothing is known about how BLVR therapies affect patient survival. There are just a few studies on EBV treatment survival. First, in 19 EBV-treated patients followed up to 10 years following therapy, it was discovered that patients who obtained lobar atelectasis after EBV treatment had a survival advantage over those who did not. This conclusion was verified in a larger cohort of 449 treated patients, where effective lobar atelectasis was linked to a survival benefit. A fourth study found that following EBV therapy, the BODE index, which is used to predict survival, improved. To our knowledge, only one article has reported on long-term survival after coil therapy, with a 5-year follow-up in 45 patients, 51% of who remained alive. We included COPD patients who came to our hospital for a consultation to determine their eligibility for BLVR therapy and who had pulmonary function testing during that visit. Furthermore, the vital condition was confirmed. In total 1471 patients were enrolled (63% female, mean age 61 years) (63% female, mean age 61 years). A total of 531 patients (35%) died during follow-up, and the whole population's median survival time was 2694 days (95% Confidence Interval (CI) 2462 days to 2926 days), or around 7.4 years. The median survival time of patients who received BLVR was significantly longer than that of patients who did not receive BLVR (3133 days versus 2503 days, p 0.001), and BLVR was found to be an independent predictor of survival when other survival-influencing factors such as age, gender, or disease severity were controlled for.

According to our findings, the median survival period for individuals considered for BLVR therapy is roughly 7.4 years. Furthermore, individuals treated with BLVR had considerably higher median survival times than those who were not. The gap between these groups was 630 days, or almost 1.7 years. Furthermore, when other survival influencing factors such as age, gender, or disease severity were controlled for, receiving BLVR treatment was an independent predictor of survival. The median survival period for patients treated with BLVR was 3133 days (about 8.6 years), compared to 2503 days (approximately 6.9 years) for the non-treated group. Because all patients were referred to our hospital for BLVR and asked for a consultation, the patient sample included in this research represents a carefully chosen cohort. As a result, making direct comparisons to other severe COPD populations is difficult. The NETT trial group, which included patients who were eligible for lung volume reduction surgery, is the most similar (LVRS). The median survival time in this group was approximately 6 years for the LVRS-group and approximately 5 years for the medical care control group (not receiving LVRS). Furthermore, in large general cohorts of patients with (very) severe COPD, men's median survival time ranged between 2.3 years and 5.2 years, and women's median survival time ranged between 3.2 years and 8 years. The median survival period following lung transplantation in COPD patients was found to be between 6.3 years and 9 years. Our study differs from prior BLVR survival studies in that we compared individuals who had BLVR to those who did not. The only other publication that compared patients who were chosen for BLVR vs those who were not chosen for BLVR was also from our institution and included some of the same patients. It was, however, limited to individuals examined till 2014 and included data from patients who were recommended to but did not attend our hospital. We included all treated patients, regardless of whether they were treatment responders or non-respond-

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-ers, therefore the difference in survival when non-treatment responders were excluded in our group may have been much higher. BLVR therapy was found to be an independent predictor of survival in our study. Lower age, female gender, less hyperinflation or emphysema severity, greater BMI, higher PaO2, and less bronchial wall thickness evaluated on CT scan were the other independent predictors of survival. The majority of which are well-known from literature. There was no difference in median survival time between the two BLVR techniques: coils or EBV therapy. Aside from the targeted population and the possibility for selection bias in our control group, which included patients who were not eligible for BL-VR, another limitation of our study is that the reasons of mortality and other medical events or therapies throughout the follow-up period were unclear. This new data might have allowed for a more in-depth investigation of mortality in this patient group. The large sample size population, for whom the vital status could be validated, as well as the targeted patient group with extended demographics and long-term follow up, are the study's strengths. In conclusion, our findings, in conjunction with the current research on both bronchoscopic and surgical lung volume reduction therapies, indicate that lowering lung volume in patients with COPD and severe hyperinflation, as well as shortened life expectancy, may result in a survival advantage.