EDITORIAL

Chronic Obstructive Pulmonary Disease—a Growing Cause of Death and Disability Worldwide

Tobias Welte

Editorial to accompany the articles "Endoscopic volume reduction in COPD—a critical review" by Daniela Gompelmann, Ralf Eberhardt, and Felix Herth, and "The diagnosis of chronic obstructive pulmonary disease" by Rainer Burkhardt and Wulf Pankow, in this issue of *Deutsches Ärzteblatt International*

Department of Respiratory Medicine, Hannover Medical School: Prof. Dr. med. Welte

Chronic obstructive pulmonary disease (COPD) ranks among the major diseases of mankind. The Global Burden of Disease Report (1), published in 2013, lists COPD as the fifth most common cause of death in the USA; as a cause of lost disability-adjusted life-years (DALYs, a measure of time spent in good health), COPD is second only to ischemic heart disease. Because the population as a whole is aging, diseases affecting older persons, especially diabetes and COPD, can be expected to become more common. The situation in most European countries presumably resembles that in the USA. For Germany, this is confirmed by the findings of the Burden of Obstructive Lung Disease (BOLD) Project (2).

COPD is diagnosed too late

The BOLD Project revealed a key problem in the care of COPD patients: delayed diagnosis. Almost 50% of the patients examined in this population-based screening study who were found to have manifest airway obstruction had not previously been given a diagnosis of COPD. If COPD is diagnosed too late, the chance to begin timely treatment is lost, and with it an important opportunity to arrest, or at least slow, the progression of the disease. While it is true, as discussed in a recent review, that we know very little about how the drugs given in early COPD actually work (3), the benefits of three early interventions are absolutely clear: there is no question about the preventive efficacy of smoking cessation, disease-specific exercise therapy, and immunization against influenza and pneumococcal disease (two types of infection that can make COPD much worse).

In an article appearing in this issue of *Deutsches Ärzteblatt International*, Burkhardt and Pankow give a perspicuous overview of the main elements of the diagnostic evaluation of COPD (4). What symptoms should prompt suspicion of an airway disease? What tests can a general practitioner perform, and what differential diagnoses should be considered? When must a specialist be consulted, and what diagnostic modalities are available in specialized hands? The gist of the authors' message is that a history and physical examination directed at the detection of pulmonary disease, along with basic pulmonary function testing, should be a part of the standard repertoire of general medical practice. The quality of the analysis of pulmonary function can only be improved, however, by better training of all of the occupational groups that participate in this type of diagnostic testing.

The benefits and potential of drug treatment

The basic principles of the pharmacotherapy of COPD have been known for many years. Anticholinergic drugs were introduced in the 19th century, theophylline in the 1920s, inhaled corticosteroids in the 1950s, and inhaled beta-sympathomimetic drugs in the 1960s. Since then, all of these substances have been further developed and improved, long-acting drugs have replaced short-acting ones, inhaled systems have been optimized, and combined preparations have simplified use by the patient. The indications for each type of drug have become clearer, with better delineation of their risk–benefit profiles. Drugs cannot prevent the progression of COPD; at best, they can only slow it. Many truly new types of drug treatment have been clinically tested over the years and then have not been approved because their efficacy could not be demonstrated with statistical significance. If all of the available conservative treatments still cannot free the patient from the severe symptoms of COPD, invasive treatments are possible that otherwise would not ordinarily be considered.

One such treatment is endoscopic lung volume reduction, which is presented in an article by Daniela Gompelmann et al. in this issue (5). Overinflation of the lungs, a typical finding in COPD mainly when marked pulmonary emphysema is present, flattens the diaphragm and puts the ribs in a horizontal position. The efficacy of the respiratory musculature is lower in this situation, and this contributes (in addition to the impaired ventilation and diffusion that are characteristic of COPD) to shortness of breath and low exercise capacity. Emphysematous regions of the lungs are ventilated but no longer participate in gas exchange. Their physical reduction by the various techniques described in the article can economize the function of the respiratory muscles and improve the ventilation/perfusion ratio of the lung regions that are still intact.

Early reports that endoscopic volume reduction markedly improved the exercise capacity and quality of life of patients with COPD led to a rapid rise in the number of such procedures even before the technique had been evaluated in randomized controlled trials. This was able to happen because the regulatory framework for the approval of medical products is much less strict than the

fundamentally different regulatory framework for drug approval.

Benefit or harm?

The last few years have seen the publication of several well-conducted randomized controlled trials of techniques for endoscopic lung volume reduction. Their results are reminiscent of those that accompanied the development of medical products in other fields of medicine, e.g., mitral valve clips in cardiology (6). Yes, there are indeed patients who benefit from endoscopic lung volume reduction with markedly improved symptoms and a better quality of life. Most, however, experience no such improvement. The method is not entirely without side effects, either, and it can even be harmful, with complications including pneumothorax and post-stenotic pneumonia. In their article, Gompelmann et al. compendiously summarize current knowledge about the various methods of endoscopic lung volume reduction. Their benefits and risks, and potential ways to identify the patients who are most likely to benefit, are described on the basis of the current literature and the authors' extensive experience. This objective assessment can help curb the inappropriately high expectations from endoscopic lung volume reduction that are now being fueled by Internet presentations and in patient fora, without neglecting its true potential. The information provided will help treating physicians advise their patients competently on the basis of the facts as they are now known.

Conflict of interest statement
Prof. Welte has received payment for carrying out clinical trials on behalf of the Spiration company.

Translated from the original German by Ethan Taub, M.D.

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Corresponding author
Prof. Dr. med. Tobias Welte
Medizinische Hochschule Hannover (MHH)
Klinik für Pneumologie
Carl-Neuberg-Str. 1
30625 Hannover, Germany
welte.tobias@mh-hannover.de

► **Cite this as:**
Welte T: Chronic obstructive pulmonary disease—a growing cause of death and disability worldwide. Dtsch Arztebl Int 2014; 111: 825–6.
DOI: 10.3238/arztebl.2014.0825