Spirometric findings as predictors of survival

Peter Lange

The basic part of any pulmonary assessment is simple spirometry comprising the measurement of forced vital capacity (FVC) and forced expiratory volume in 1 s (FEV1). Historically these measurements represent refinements made by Tiffeneau in 1947 of the original concept of vital capacity (VC), introduced by John Hutchinson >100 years earlier.1 Impressively, Hutchinson not only invented this measurement and described its dependence on age, height and weight, but he also performed the first epidemiological study of >2000 individuals and observed a strong relationship between the measured value and survival. Thus, the actual reason for calling the amount of exhaled air from the fully inflated lungs the ‘vital capacity’ was the observation made by its inventor indicating that this measurement was strongly related to survival.1

Later on, during the first half of the 20th century, although some investigators from time to time reported the usefulness of VC for prediction of health-related outcomes, it seems that the predictive power of VC was to a large degree forgotten.2 Ironically, in the mid-1970s a series of scientific papers initiated a renewed interest in these measurements in the general population. These studies did not come from respiratory physicians but from cardiologists, and these studies did not come from respiratory physicians but from cardiologists, and historically these measurements represent refinements made by Tiffeneau in 1947 of the original concept of vital capacity (VC), introduced by John Hutchinson >100 years earlier.1 Impressively, Hutchinson not only invented this measurement and described its dependence on age, height and weight, but he also performed the first epidemiological study of >2000 individuals and observed a strong relationship between the measured value and survival. Thus, the actual reason for calling the amount of exhaled air from the fully inflated lungs the ‘vital capacity’ was the observation made by its inventor indicating that this measurement was strongly related to survival.1

In this issue of Thorax (see page 49), Burney and Hooper, using data from a US cardiovascular study of a general population sample, once again explore the relationship between spirometry and mortality.11 This time the particular focus is on which index (FEV1, FVC or FEV1/FVC) is most important.12 Their main message is that it is not the presence of obstruction as such but rather the value of FVC (and also of FEV1) that is most important. Their findings are important but should only be extrapolated with great care to the general population, since Burney and Hooper excluded individuals with respiratory symptoms and diseases (presumably excluding quite a few individuals with airways obstruction). These observations unite the findings in different subgroups of individuals including those with normal lung function and those with both obstructive and restrictive patterns. The present observations are also in keeping with the fact that it is beneficial to improve FEV1 by means of bronchodilation even though this may worsen the level of obstruction as assessed by the FEV1/FVC ratio and also with the fact that different prognostic indices such as BODE and ADO include FEV1 and not the FEV1/FVC ratio.12 13 Thus, Burney and Hooper conclude that size matters more
Echocardiography, troponins and lower extremity ultrasound: the ‘Three Musketeers’ lead the prognosis of acute pulmonary embolism

Antonio Vitarelli

The European guidelines\(^1\) and American guidelines\(^2\) highlight that, in the diagnosis and management of acute pulmonary embolism (PE), the functional consequences determined by right ventricular (RV) dysfunction and elevation of cardiac biomarkers are more relevant for risk stratification than assessment of the anatomical burden and distribution of the pulmonary artery thrombus. The mortality rate associated with massive PE may reach 30%, while that associated with so-called submassive PE (defined as the presence of RV dysfunction without systemic hypotension) is between 5% and 10% and that associated with non-massive PE is <5%.\(^3\) While there is consensus that thrombolytic therapy, catheter embolectomy or surgery are indicated in patients with right heart failure and haemodynamic instability, the appropriate treatment of patients with submassive PE remains controversial. In this subset of patients, the ‘tricks of the trade’\(^5\) should be identified and clinical-laboratory aspects evaluated to judge the level of severity. RV echocardiographic parameters, cardiac troponins and peripheral ultrasound data are described as poor prognostic factors in the currently available literature.

Each of these tests has its own advantages and limitations. A number of studies have shown that RV dysfunction and

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