Editorial

‘This is a walking test, not a talking test’: the six minute walking test in congestive heart failure

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This editorial refers to ’Six minute corridor walk test as an outcome measure for the assessment of treatment in randomized, blinded intervention trials of chronic heart failure: a systematic review’† by L.G. Olsson et al., on page 778

Decreased exercise capacity is experienced by many patients with congestive heart failure (CHF). During normal daily activities exertion, fatigue, and dyspnoea are frequently reported, and reduced maximal exercise capacity found in the setting of laboratory-based testing is well known. Measurement of exercise capacity has been adapted as a principal variable to assess the clinical effect during evaluation of a new drug and as a supplementary method to describe one facet of the intervention. However, determination of exercise capacity during medical treatment in patients with CHF using different exercise tests has yielded different outcomes in single-centre as well as multi-centre studies. The heterogeneity of the studies on medical treatment with differences in aetiology of heart failure, treatment dosage, duration of treatment, blinding or open-label design, variability in instruction and encouragement, study size, proportion of men and women, age, height and weight of the patients, and severity of the heart disease and concomitant diseases might explain the discrepancy in outcome. Recently though, the studies with resynchronization in CHF with more homogenous design and homogenous patient populations have shown an overall increase in exercise capacity as discussed by Olsson et al.2

The normal cardiovascular responses during exercise are increased heart rate, increased systolic blood pressure, unchanged or decreased diastolic blood pressure, increased stroke volume, and increased ejection fraction. Increases in stroke volume and heart rate contribute to the increase in cardiac output up to a level of 60% of maximal exercise. However, at higher levels of exercise, the increase in cardiac output is determined primarily by the increase in heart rate without further increase in stroke volume.3 This means that the intrinsic pharmacodynamic properties of the drug may directly affect the level of exercise capacity. Differences in the abilities of the drugs to counteract the normal catecholamine-induced tachycardia might partly explain the discrepancy in outcome as seen, for example, with beta-blockers in CHF patients. Thus an ideal test for evaluating changes in exercise capacity during beta-blocker therapy would be independent of maximal heart rate level. The symptom limited maximal bicycle test seems inappropriate in patients with CHF, whereas the self-paced 6 min walking test corresponds more closely to the demands of daily activities in a group of patients with CHF consisting of many elderly.

The self-paced 6 min walking test as a submaximal exercise test has been adopted in measuring exercise capacity in patients with chronic diseases.4,5 The advantages of the 6 min walking test compared with other exercise tests is that it is simple, safe, and non-expensive to perform. Furthermore and importantly, it has been shown to predict mortality and morbidity in patients with CHF.6 It has been shown previously that patients with CHF were able to perform stable 6 min walking distances after the first two walk tests, of which the second walking distance was higher than the first.7,8 Therefore, it seems important to emphasize for future studies that the exercise test should be duplicated at baseline and at the end of the study. This familiarizes the study participants with the exercise test, and makes the outcome more reliable.

When the 6 min walking test is used in clinical trials as a measure of exercise capacity, it presupposes that the instruction before the test, and the completion of the test, will be performed in a standardized manner in an...
uncrowded area assisted by a control person without any knowledge of which treatment the patient has been randomized to. If patients with CHF are encouraged, they are able to walk significantly longer. Inter-observer variation in instruction and encouragement during the exercise test may contribute to the differences in exercise outcomes in previous studies, and seems to be an essential problem especially in multi-centre trials. Standardization is therefore recommended to minimize the potential source of error due to different level of encouragement.

The systematic review by Olsson et al. reflects some of the problems using surrogate endpoints in the evaluation of a new treatment in patients with CHF. Exercise capacity, peak oxygen uptake, left ventricular ejection fraction (LVEF), description of symptoms with the NYHA classification, and different quality of life scores are some of the surrogate endpoints that have been used in the description of the investigated treatments. More or less soft endpoints which may not be concordant, as seen for example by the lack of correlation between exercise capacity and LVEF, but describe the intervention in a more detailed manner. For example, if an outpatient with CHF in sinus rhythm, despite maximal treatment with ACE-inhibitor, beta-blocker, aldosterone-receptor antagonist, and diuretic still is symptomatic, treatment with digoxin should be initiated. It should be kept in mind that the main goal in this situation is not necessarily to prolong life, but to decrease symptoms, and if the symptoms are not reduced it is appropriate to discontinue the treatment with digoxin again. In a group of symptomatic patients it is reasonable that the goal for the intervention should not necessarily be a reduction in mortality, but just as well a reduction in hospitalization rate or an improvement in general wellbeing or exercise capacity. However, if improvement in these endpoints during evaluation in phase one to three trials is not observed, it does not preclude finding a beneficial effect on mortality.

Treatment with angiotensin converting enzyme (ACE) inhibitors and beta-blockers is well known to reduce mortality and morbidity in patients with CHF. However, the present review by Olsson et al. elucidates the fact that only a minority of the studies with ACE-inhibitors and beta-blockers have shown a similar improvement in exercise capacity. The consequence of this is that when anti-congestive therapy is initiated, the message to the patient should be that treatment will prolong life and reduce the risk of being hospitalized. But one cannot necessarily expect an increased exercise capacity. This is an important information to the patients preventing them from being disappointed and, therefore, interrupting the well-documented treatment by themselves if they do not feel any improvement in exercise capacity or general well-being.

No single exercise test can be announced as the golden standard, as evident by the different methods used in this context. However, if the 6 min walking test is employed as a measure of exercise capacity, reflecting the demands of daily activities in a patient with a chronic disease, it should be performed as repeated tests in a strict standardized manner in an uncrowded area with a well-prepared instruction without encouragement of the patient during the test, and with the final words: 'This is a walking test—not a talking test'. If this is fulfilled, then the 6 min walking test will give valid supplementary information on the treatment effect and physical status of the patient.

References