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Stair Climbing Test Streamlines the Evaluation of Nonmalignant Lung Resection Candidates

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The third ACCP guidelines [1] on the preoperative functional evaluation of lung cancer patients considered for lung resection highlight two important new concepts compared to previously published ERS/ESTS guidelines [2]. The guidelines emphasize the extent of resection which has been reported to be one of the most important determinants of morbidity and mortality, and they now include a symptom-limited stair climbing test (SCT) that has been shown to be associated with a low risk of postoperative complications [3]. The guidelines recommend an upfront stratification of patients according to the anatomically predictive postoperative (PPO) FEV₁ and DL_{CO} values, as well as the early integration of an SCT in order to identify patients at high risk of complications requiring further investigations. The proposed algorithm for lung cancer patients, however, does not include lung resection candidates with nonmalignant disease, who are likely to be of younger age and suffer from different comorbidities than lung cancer patients.

To evaluate the applicability of the guidelines [1] for nonmalignant cases, we performed a post hoc analysis of a cohort of lung resection candidates included in two studies performed in Cape Town (South Africa) evaluating the SCT to 20 m of altitude [4, 5]. Fifty-nine out of 76 patients presented a nonmalignant indication (76%) for lung resection and were included in the analysis. Altitude reached and speed of ascent were the most accurate surrogate of VO₂ peak during CPET [4, 5], which so far has been the most consistently reported predictor of postoperative mortality and morbidity [6]. Lung resection was most commonly planned as lobectomy for tuberculosis-related lung disease. Patients' demographics as well as the lung function cutoff values suggested by the guidelines [1] are reported in table 1. The percentage of patients with high, moderate and low risk according to PPO FEV₁ and DL_{CO} that reached 20 m altitude was 48.1, 96.7 and 100%, respectively (table 1). Pending a prospective evaluation, our results support the validity of the guidelines for resection of lung cancer [1] for young-

Table 1. Patients' demographics (n = 59)

Female, n (%)	22 (37.2)
Median age, years	42.2
Range	17–72.5
IQR	55.4
HIV infected, n (%)	11 (14)
COPD, n (%)	29 (49.1)
<i>Indication for resection</i>	
Post-TB bronchiectasis, n (%)	39 (66.1)
Aspergilloma, n (%)	16 (27.1)
Hydatid cysts, n (%)	4 (6.7)
<i>Pulmonary function</i>	
Mean FVC % predicted ± SD	62.3±0.15
Mean FEV ₁ % predicted ± SD	50.7±0.14
Mean DL _{CO} % predicted ± SD	64.2±0.16
<i>Low-risk group</i>	
PPO FEV ₁ and DL _{CO} >60%, n (% of total)	2 (3.3)
Mean VO ₂ peak (ml/kg/min)	26.8
PPV for VO ₂ peak >20 ml/kg/min (%)	100
Reached 20 m at SCT, n (% of category)	2 (100)
<i>Moderate-risk group</i>	
PPO FEV ₁ or DL _{CO} <60% and both >30%, n (% of total)	30 (50.1)
Mean VO ₂ peak (ml/kg/min)	25.6
PPV for VO ₂ peak >20 ml/kg/min (%)	82.7
PPV for VO ₂ peak >15 ml/kg/min (%)	96.5
Reached 20 m at SCT, n (% of category)	29 (96.7)
<i>High-risk group</i>	
PPO FEV ₁ or DL _{CO} <30%, n (% of total)	27 (45.8)
Mean VO ₂ peak (ml/kg/min)	20.3
PPV for VO ₂ peak >20 ml/kg/min (%)	63.3
PPV for VO ₂ peak >15 ml/kg/min (%)	84.6
Reached 20 m at SCT, n (% of category)	13 (48.1)

COPD = Chronic obstructive pulmonary disease defined as persistent airflow limitation (FEV₁/FVC <0.7); FVC = forced vital capacity; DL_{CO} = diffusion capacity for carbon monoxide corrected for haemoglobin; PPV = positive predictive value.

^a Risk groups according to the guidelines [1].

er patients with a variety of nonmalignant indications for lung resection. We conclude that SCT has the potential to reduce the number of time- and resource-consuming investigations in moderate risk candidates for lung resection with nonmalignant indications.

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