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Title: The value of spirometry to diagnose a restrictive pattern

Mrs. Liliana 6039 Raposo liliana.raposo@cardiocvp.net [1] and Dr. António 6040 Bugalho antonio.bugalho@netcabo.pt MD [2]. [1] Serviço De Pneumologia, Centro Hospitalar Lisboa Norte, Lisbon, Portugal and [2] Chefe Da Unidade De Técnicas Invasivas Pneumológicas, Hospital Beatriz Ângelo, Lisbon, Portugal .

Body: Background: The assessment of total lung capacity (TLC) is the gold standard to detect a restrictive pattern. However, in some cases, patients are subjected only to spirometry and a low forced vital capacity (FVC) with a normal FEV1/FVC ratio is classified as restriction. Objectives: Determine the value of FVC measured by spirometry to diagnose a restrictive abnormality and identify FVC cut-off values that may predict a restrictive pattern. Methods: Spirometry and plethysmography results from 1.937 adult patients who undertook both tests in the same appointment were evaluated in a retrospective study. All patients with a normal or low FVC (<80% predicted), with a normal FEV1/FVC (>70%) and a normal or low TLC (<80% predicted) were included. Patients with a low FEV1/FVC associated to an obstructive or mixed pattern were excluded. Subgroups were created based on gender and FVC degree of severity. Results: A total of 374 patients (19.3%) had a restrictive pattern, mean age was 57.8 years and 189 were females (50.5%). FVC determined by spirometry had a 48.5% sensibility, 95.6% specificity, 80% positive predictive value (PPV) and 83.3% negative predictive value (NPV) to detect restriction. The best cut-off values to determine a restrictive impairment were FVC<60% predicted in males (PPV 97.3% and NPV 12.2%) and FVC<50% predicted in females (PPV 100% and NPV 25.7%). Conclusion: Spirometry is able to correctly diagnose a restrictive pattern in specific subgroups of patients according to FVC severity. These results may help clinicians, especially in primary care, to decide which patients need to perform additional lung measurements.