

Noninvasive Measurement of Carboxyhemoglobin Levels for Adjustment of Diffusion Capacity Measured During Pulmonary Function Testing.

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Background

The diffusing capacity of the lungs for carbon monoxide (D(LCO)) is commonly measured during pulmonary function testing (PFT). Although adjustment of the measured D(LCO) for an elevated baseline carboxyhemoglobin level is recommended, carboxyhemoglobin is not routinely measured, which may reduce the accuracy of D(LCO) measurements. We sought to assess the utility of routine carboxyhemoglobin measurement and subsequent D(LCO) correction in patients referred for PFT.

Methods

We retrospectively reviewed 100 consecutive PFT results, including D(LCO) assessment. We used a Pulse CO-Oximeter (recently approved by the Food and Drug Administration) to noninvasively measure baseline carboxyhemoglobin (SpCO). We used simple descriptive statistics to compare the SpCO values. In subjects with elevated SpCO (> 2%) we adjusted the percent-of-predicted D(LCO). Interpretation of D(LCO) was categorized according to the American Thoracic Society classification scheme for respiratory impairment.

Results

The self-reported smokers had higher average SpCO than did self-reported nonsmokers (1.6% vs 3.5%, $p < 0.001$), although 14% of nonsmokers had an elevated SpCO and 26% of smokers had normal SpCO. When the D(LCO) was corrected for elevated SpCO, 2 patients moved from a category of moderate impairment to mild impairment. Both were smokers.

Conclusions

The noninvasive measurement of carboxyhemoglobin is easy to perform during PFT. When precise measurement of D(LCO) is important, noninvasive measurement of carboxyhemoglobin may be of value. If routine SpCO measurement is considered, the highest yield is among current smokers.