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Quantitative CT adiposity metrics as predictors of reduced expiratory flow in WTC workers and volunteers

Rafael E. de la Hoz, Xiaoyu Liu, John Doucette, Anthony Reeves, Raúl San José Estépar, Yunho Jeon, Juan Celedón European Respiratory Journal 2021 58: PA1901; **DOI:** 10.1183/13993003.congress-2021.PA1901

Article

Info & Metrics

Abstract

Introduction: Overweight and obesity (as measured by body mass index, BMI) are highly prevalent in the former WTC workers, and significantly associated with adverse lower respiratory outcomes. We investigated whether quantitative CT (QCT) metrics of visceral adiposity were more predictive of a defined adverse respiratory outcome than BMI.

Methods: We tested for association between FEV₁ below the predicted lower limit of normal (FEV₁<LLN) and the following adiposity measurements in a chest CT closest to the index spirometry: QCT-measured subcutaneous fat (in mm²), abdominal/visceral fat (mm²), pericardial fat (cm3), and BMI (kg/m²). Covariates of interest included age on September 11 of 2001, sex, height, ethnicity/race, smoking status (never, former and current smokers), pre-WTC and WTC occupational exposures, and occupation. All logistic regression models were adjusted for height, smoking status, WTC arrival before 48 hours, and sex.

Results: We had complete data on 366 former WTC workers, who were predominantly (82.5%) male with mean age (SD) 42.7 (8.9) years on 11 Sep 2001. In unadjusted and adjusted analyses, an FEV₁<LLN was significantly associated with subcutaneous fat (adjusted odds ratio [ORadj]=1.02, 95% confidence interval [CI]=1.01 to 1.03) and BMI (ORadj=1.06, 95% CI=1.02 to 1.11, p<0.006), but not with either QCT-measured abdominal/visceral or pericardial fat.

Discussion: In this cohort of WTC workers, only BMI and QCT-measured subcutaneous fat were associated with an FEV₁<LLN. The predictive value of QCT metrics of visceral adiposity needs to be explored further in future investigations of various adverse respiratory outcomes.

Comorbidities Spirometry

Footnotes

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