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**Title:** Cardiovascular comorbidities prevails in the early stages of COPD irrespective of predominant airway or emphysema phenotype

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**Body:** COPD is a heterogeneous disorder with extrapulmonary manifestations. Multivariate models based on sputum features and whole lung function allow patients to be classified in a graph whose coordinates CT1 and CT2 reflect COPD phenotype and severity as assessed by CT (Camiciottoli, G et al. ERJ in press). Phenotypic characteristics range progressively from airway predominant (AP)(CT1-) to emphysema predominant (EP)(CT1+). Severity of COPD increases progressively from CT2- to CT2+. In 242 COPD patients we assessed prevalence of Hypertension(H), Coronary Artery Disease(CAD), Peripheral Arterial Disease(PAD), Heart failure(HF), Diabetes(D), Osteoporosis(O), and Psychological Disorders(PD). We compared prevalence among subsets partitioned according to COPD phenotype and severity

	AP(CT1-)	PE(CT1+)	p	MildCOPD (CT2-)	SevereCOPD(CT2+)	p
H	59%	52%	ns	65%	41%	<0.001
CAD	17%	15%	ns	23%	7%	<0.001
PAD	34%	27%	ns	40%	16%	<0.0001
HF	10%	10%	ns	10%	10%	ns
D	19%	13%	ns	18 %	14%	ns

O	7%	13%	ns	11%	10%	ns
PD	15%	17%	ns	15%	17%	ns

	APMild CT1-/CT2-	APSevere CT1-/CT2+	EPMild CT1+/CT2-	EPSevere CT1+/CT2+	p
H	63%	48%	68%	40%	<0.01
CAD	19%	11%	28%	5%	<0.01
PAD	39%	19%	42%	15%	<0.001
HF	11%	7%	9%	12%	ns
D	19%	19%	16%	10%	ns
O	8%	7%	16%	12%	ns
PD	13%	22%	19%	15%	ns

Cardiovascular comorbidities are very common in COPD, with the highest prevalence in milder disease (CT2-) irrespective of the phenotype, suggesting that COPD severity progression is allowed to patients without concomitant cardiovascular comorbidity. These data support recent findings of excess mortality in GOLD B with respect to GOLD C patients and underline the need to suspect, diagnose and treat cardiovascular comorbidities in early stages of COPD.