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Title: Sleep disordered breathing and the incidence of inappropriate ICD discharges

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Body: Purpose: Previous studies confirmed inappropriate ICD discharges associated with an increased mortality in chronic heart failure (CHF). Sleep disordered breathing (SDB) is a known risk factor for new onset and reoccurrence of atrial fibrillation (afib). We therefore hypothesized that Cheyne-Stokes respiration (CSA) and obstructive sleep apnoea (OSA) impact inappropriate cardioverter-defibrillator (ICD) discharges. Methods: A cohort of 172 patients (pts) with CHF (LVEF \leq 45%, NYHA-class \geq 2) and an implanted ICD device was studied. Patients underwent overnight polygraphy (noSDB (Apnoea Hypopnea Index (AHI) $<5/h$): n=54, OSA (AHI \geq 5/h, $>50\%$ obstructive events): n=59, CSA (AHI $>5/h$): n=59). During follow-up (36 months) inappropriate ICD-discharges and new-onset of afib (in pts with no present or history of afib, n=130) were documented. Results: During follow-up 17 inappropriate ICD-discharges (5 tachyarrhythmic events, 4 lead dysfunctions, 4 oversensings, 4 sinus tachycardias), and 35 new-onset afib episodes were documented. Stepwise Cox proportional hazard regression analysis adjusted for age, sex, ischaemic cause, BMI, preexisting atrial fibrillation (case 1 only), LVEF, LAD, VO₂peak during CPX, NTproBNP, CRP, β -blocker, amiodarone, and NYHA-class revealed age as the only independent risk factor for inappropriate ICD-discharges (HR 0.90, 95%CI 0.86-0.96) and new-onset afib (HR 1.06, 95%CI 1.01-1.12). Conclusion: Due to the large heterogeneity of underlying causes SDB is not associated with inappropriate ICD-discharges. Larger trials seem inevitable to clearly elucidate the impact of SDB on new-onset of afib in CHF pts.