Prevalence, incidence and prognostic implications of left bundle branch block in patients with stable coronary artery disease. an analysis from the CLARIFY registry

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Background: The prevalence, and prognostic implication of left bundle branch block (LBBB) in general population and patients admitted for acute myocardial infarction (MI) as been extensively studied. However, data are scarce about patients with stable coronary artery disease (CAD) and it remains unclear whether LBBB is only a marker of a severe cardiomyopathy or an independent predictor of events in these patients.

Purpose: We aimed to describe the prevalence, incidence and prognostic implications of LBBB in patients with stable CAD. Additionally, we aimed to describe the incidence of newly diagnosed LBBB that occurred without recent myocardial infarction.

Methods: CLARIFY is an international registry of more than 30,000 patients with stable CAD. LBBB was collected at baseline and at each follow-up visit, and patients were considered to have LBBB if the length of the QRS complex was of more than 120 milliseconds. Patients with previous pacemaker implantation of internal cardiac defibrillator were excluded. The primary outcome was a composite of cardiovascular (CV) Death, MI or stroke, and secondary outcomes included hospitalization for heart failure (HF) or the need for pacemaker implantation.

Results: From the 23,457 patients with available data regarding LBBB status, 1,041 (4.4%) had LBBB at baseline and 1,237 (5.3%) had at least one LBBB assessed during 5-year follow-up. Only 21 patients with newly diagnosed LBBB overtime, had a documented MI the same year. Compared to patients without LBBB, patients with LBBB had a higher risk profile regarding age (67.2 ± 10.1 versus 63.6 ± 10.4 years, p < 0.0001), history of coronary artery bypass grafting (29.2% vs 23.7%, p < 0.0001), diabetes (35.1% vs 28.4%, p < 0.0001), and HF (25.2% vs 16.8%, p < 0.0001) (Table). In unadjusted analysis, patients with LBBB had a higher risk of primary outcome (13.4% vs 8.7%, p < 0.0001) and each secondary outcome. In multivariate analysis taking into account several possible confounders, there was no difference in the rate of CV death, MI or stroke between LBBB or no-LBBB patients (adjusted HR 1.04, 95% CI 0.85 – 1.29). However, patients with LBBB had a higher rate of pacemaker implantation (adjusted HR 2.21, 95% CI 1.55 – 3.15, p < 0.0001) and hospitalization for HF (adjusted HR 1.53, 95% CI 1.25 – 1.88, p < 0.0001). (Figure)

Conclusion: The prevalence of LBBB in patients with stable CAD was 4.4% and 5.3% with 5-year follow-up. The overwhelming majority of newly diagnosed LBBB were not contemporary of documented myocardial infarction. LBBB was not associated with a higher rate of major adverse cardiovascular events, including all cause mortality but with a higher risk of pacemaker implantation and hospitalization for heart failure. To our
knowledge this is the first study reporting such results in a broad population of stable CAD patients.