Furthermore, we observed a significantly abbreviated APD90 in ISO-stimulated cardiomyocytes from SCN10A−/− compared with WT (P < 0.05). Preincubation with the both inhibitors significantly reversed the ISO-dependent enhancement of INaL, APD90 and CaSpF in WT myocytes, but not in SCN10A−/−. In conclusion, we show for the first time upregulation of Nav1.8, its colocalization and interaction with CaMKII in human HF. The Nav1.8 influences cellular electrophysiology by prolonging APD, increasing ryanoidine receptor leakiness and thereby cellular proarrhythmogenic events in HF cardiomyocytes. Specific and pharmacological inhibition of Nav1.8 using novel inhibitors exerts potent antiarhythmogenic action. This observation may be a novel of specific antiarrhythmic approach under conditions of HF that merits further investigation.

LIPIDS, OBESITY AND METABOLIC SYNDROME

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Prevalence of familial hypercholesterolemia in Poland in the LIPIDOGRAM2004 and 2006 population-based surveys

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Methods: The LIPIDOGRAM2004 and LIPIDOGRAM2006 studies were population-based surveys, which assessed the prevalence of dyslipidaemia among adult patients under the care of family physicians across 444 practices in Poland. 34217 patients (17065 in 2004 and 17152 in 2006) older than 18 years, recruited by 675 study physicians, were analyzed to estimate the prevalence of FH with available DLCN criteria, including low-density lipoprotein cholesterol (LDL-C) and personal history of premature atherosclerotic cardiovascular disease. For individuals reporting statin use, we multiplied their LDL-C level by 1.43 to estimate untreated LDL-C levels, as was previously done by Benn, and Edwards and Moore. Results were extrapolated to the 31,532,051 Polish adults >18 years of age (based on Central Statistical Office data on the population of Poland, June 30th 2006).

Results: 33689 patients were included to the final analysis (some data were excluded due to duplication as well as due to triglycerides levels > 400 mg/dl in LIPIDOGRAM2004 study, where LDL-C was measured with the Friedewald formula). We based 199 patients with LDL-C ≥ 330 mg/dl (≥ 8.5 mmol/l) (8 pts. in DLCN criteria) including 31 patients with positive clinical personal history of premature coronary artery disease - 10 pts. in total, and 228 subjects with LDL-C: 250–329 mg/dl (6.5–8.4 mmol/l) and positive clinical personal history of premature coronary artery disease (7 pts. in total in DLCN criteria). The estimated overall prevalence of probable/definite FH (≥ 7 pts. in DLCN criteria) was 1.27% or 1 in 79, suggesting 400,457 Polish adults with FH or at the high risk of FH diagnosis.

Conclusions: FH, defined with Dutch Lipid Clinic criteria available in LIPIDOGRAM2004 and 2006 studies, might affect even 1 in 79 adults in Poland. Further studies, especially based on the future data from the Polish FH Registry – which has just been created as a part of EAS FHSC initiative, are necessary to confirm this data.

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Characterizing familial hypercholesterolemia in an electronic health record (EHR) database

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Introduction: Familial hypercholesterolemia (FH) is characterized by high cholesterol levels and increased risk for coronary heart disease (CHD) that often goes undiagnosed. The Dutch Lipid Network Criteria (DLNC) are one of several available criteria used to identify FH in clinical settings via physical examination, personal CVD history and family history criteria; in addition to the presence of deleterious mutations of the LDLR, ApoB, and PCSK9 genes. While the presence of a genetic mutation provides conclusive evidence of FH, the absence of a positive test does not rule-out FH, and genetic testing is infrequently ordered in clinical practice. Thus, agreement between clinical and genetic diagnosis of FH varies. Although there had not been an ICD diagnosis code for FH until 2016, Systematized Nomenclature of Medicine (SNOMED) clinical concept codes for FH exist in some databases, including genomic databases.

Purpose: To evaluate the concordance of identifying FH via the DLNC vs. SNOMED codes in an electronic health record (EHR) database.

Methods: Using the Practice Fusion database, a cloud-based EHR from general practices across the United States with data on approximately 25 million individuals, we evaluated the sensitivity (Se), specificity (Sp), positive predictive value (PPV), and negative predictive value (NPV) were calculated comparing an FH cohort identified via the DLNC to one identified via SNOMED codes. Analyses comparing the DLNC to SNOMED were limited to patients with at least one of the DLNC criteria.

Results: Among 907,616 patients with hypercholesterolemia, 2,180 (0.24%) were identified as having definite (DLNC ≥ 8), 258 (0.03%) as having probable (DLNC ≥ 6), and 19,879 (2.19%) as having possible (DLNC ≥ 3) FH. Among patients meeting at least one criterion of the DLNC (N=52,429), LDL-C between 4.0–4.9 mmol/l (67.8%) was the most frequent, followed by LDL-C 5.0–6.4 mmol/l (21.4%), clinical history of premature coronary artery disease (13.1%), and clinical history of premature cerebral or peripheral vascular disease