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Conference Proceedings: Aurora Scientific Day 2017

The following abstracts were presented at the 43rd Annual Aurora Scientific Day research symposium, held May 24, 2017, in Milwaukee, Wisconsin. Aurora Scientific Day hosts a forum for original research conducted by faculty, fellows, residents, and other allied health professionals affiliated with Aurora Health Care, an integrated health system with hospital and clinic locations in eastern Wisconsin and northern Illinois.

FIRST PLACE POSTER

Assessment of Chronic Disease to Determine Appropriateness of Implantable Cardioverter-Defibrillator Therapy

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Background: Implantable cardioverter-defibrillator (ICD) therapy is considered appropriate when a patient is felt to have a reasonable expectation of 1-year survival. Chronic diseases have been estimated to be associated with greater than 10% annual mortality and may reduce benefits of ICD therapy. Frailty has been estimated to be associated with greater than 20% annual mortality and has been suggested to contraindicate ICD therapy.

Purpose: Determine a risk score that may identify patients in whom ICD implantation may not be appropriate.

Methods: Patients who received an ICD for primary and secondary prevention from 2008 through 2013 at the Aurora Health Care network were studied retrospectively. Using Cox regression, a scoring system based on hazard ratios was devised to reflect risk associated with comorbidities. Survival was evaluated by Kaplan-Meier estimates.

Results: The study cohort includes 1,558 patients (mean age: 61.3 years; 495 female). Comorbidities associated with mortality included in the risk score were need for hemodialysis, myocardial infarct within 3 months prior to ICD implantation, sustained monomorphic ventricular tachycardia, New York Heart Association functional class III, age greater than 70 years, intraventricular conduction delay, diabetes mellitus, and chronic lung disease. A risk score of greater than or equal to 6 was associated with 10% mortality at 1 year and more than 20% mortality by 2 years.

Conclusion: Chronic comorbidities have a cumulative effect on mortality. Using our scoring system, patients with a risk score of 6 or greater have at least 10% mortality at 1 year and more than 20% mortality by 2 years.

SELECT ABSTRACTS

Sensitivity of Current Methods for Diagnosing and Documenting Metabolic Syndrome Within a Large Community-Based Health Care System

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Background: Metabolic syndrome (MetS) is a constellation of metabolic conditions, including abdominal obesity, high blood pressure, high triglyceride level, low high-density-lipoprotein level and high fasting blood glucose level, that increase the risk of developing chronic health conditions. Various combinations of diagnostic criteria have been proposed, including those by the National Cholesterol Education Program Adult Treatment Panel III (ATP III), World Health Organization (WHO) and International Diabetes Foundation (IDF), among others. However, inconsistent use of diagnostic criteria and inadequate scientific evidence supporting use of specific criteria are current problems in health care.

Purpose: Quantify the prevalence of MetS diagnosis within the Aurora Health Care patient population and determine the sensitivity (ie, accuracy) achieved in documenting MetS within Aurora, recognizing ATP III, WHO and IDF definitions of MetS as diagnostic gold standards.

Methods: We conducted a retrospective review of all patients encountered within Aurora from January 1, 2012, to December 31, 2015. Patients were examined to determine the occurrence and associated dates of MetS diagnosis and all indications of satisfied MetS diagnostic criteria. Indications of obesity, hyperglycemia, hypertriglyceridemia, hypoalphalipoproteinemia and hypertension, as variably defined in ATP III, WHO and IDF guidelines, included relevant diagnoses, abnormal clinical and laboratory test results and use of medications. Sociodemographic data also were collected.

Results: In total, 1,369,620 unique patients visited Aurora during the study period, with 28% of patients aged $\geq$ 60 years and most identifying as non-Hispanic white (76.8%) or black (9.93%) race. Only 4,978 patients (0.36%) received a clinical diagnosis of MetS despite evidence of satisfied ATP III and WHO criteria in 12.0% and 16.7% of patients, respectively. Satisfaction of IDF criteria occurred in only 0.16% of patients. Except for hyperglycemia, individual diagnostic criteria also showed lower-than-expected rates of clinical diagnosis. For example, obesity was diagnosed in 7.86% of patients but suggested in 39.3% of patients with body mass index $\geq$ 30 kg/m^2. The true positive rate (ie, percentage of patients with satisfied criteria who also were clinically diagnosed) was lowest in older, male, black or Hispanic patients.