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Brief Reports

EMERGENCY DEPARTMENT PRESENTATION OF PATIENTS WITH SPONTANEOUS CORONARY ARTERY DISSECTION

Rachel A. Lindor, MD, JD,* Marysia S. Tweet, MD,† Kiran A. Goyal,* Christine M. Lohse, MS,‡ Rajiv Gulati, MD, PHD,† Sharonne N. Hayes, MD,† and Annie T. Sadosty, MD*

*Department of Emergency Medicine, Mayo Clinic College of Medicine, Rochester, Minnesota, †Department of Cardiovascular Diseases, Mayo Clinic College of Medicine, Rochester, Minnesota, and ‡Department of Health Sciences Research, Mayo Clinic College of Medicine, Rochester, Minnesota

Reprint Address: Rachel A. Lindor, MD, JD, Mayo Clinic College of Medicine, 200 1st St. SW, Rochester, MN 55905

☐ **Abstract—Background: Spontaneous coronary artery dissection (SCAD) is an infrequently recognized but potentially fatal cause of acute coronary syndrome (ACS) that disproportionately affects women. Little is currently known about how patients with SCAD initially present. Objectives: We sought to describe patients who presented to the emergency department (ED) with symptoms of SCAD to improve providers' awareness and recognition of this condition. Patients and Methods: We performed a retrospective medical record review of all patients who presented to the ED of a single academic medical center from January 1, 2002 through October 31, 2015 and were subsequently diagnosed with SCAD by angiography. These patients were identified by International Classification of Diseases, Ninth Revision codes and a Boolean search of the diagnosis field of the medical record. Data regarding patients' presentations and course were abstracted by two independent reviewers. Results: We identified 20 episodes of SCAD involving 19 patients, all of whom were female. The majority of patients had 0–1 conventional cardiovascular disease risk factors. Most patients had chest pain (85%), initial electrocardiograms without evidence of ischemia (85%), and elevated initial troponin (72%). The most common diagnosis in providers' differential was acute coronary syndrome (ACS). Conclusion: Patients with SCAD present with similar symptoms compared to patients with ACS caused by atherosclerotic disease, but have different risk profiles. Providers should consider SCAD in patients presenting with symptoms concerning for ACS, especially in younger female patients without traditional cardiovascular disease risk factors, as their risk may be significantly underestimated with commonly used ACS risk-stratifiers.** © **2016 Elsevier Inc. All rights reserved.**

☐ **Keywords—spontaneous coronary artery dissection; acute coronary syndrome**

INTRODUCTION

Background

Spontaneous coronary artery dissection (SCAD), defined as a nontraumatic and noniatrogenic separation of the coronary artery walls in the absence of atherosclerosis, is an increasingly recognized cause of acute coronary syndrome (ACS) (1). Arterial wall dissection or vessel wall hematoma may occlude the coronary arterial lumen and lead to subsequent myocardial infarction (MI) or ischemia (2). Compared to ACS related to atherosclerotic coronary heart disease, ACS related to SCAD disproportionately affects young women without traditional cardiovascular disease (CVD) risk factors. SCAD risk factors include pregnancy and postpartum status, systemic vasculopathies such as fibromuscular dysplasia, connective tissue disorders, and recent significant physical or emotional stressors (3). Though previously thought to be quite rare, improved

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techniques for intracoronary imaging now suggest that SCAD may be the cause of up to 4% of all ACS and up to 25% of MIs in women under age 50 years (4). Despite better understanding of the prevalence and risk factors for the disease, SCAD continues to be frequently missed or misdiagnosed (4).

Importance

Failure to consider SCAD as a potential cause for symptoms consistent with ACS may have significant consequences. First, because SCAD often arises in individuals without traditional CVD risk factors, patients presenting with SCAD-related symptoms may be deemed by clinicians to be low risk for ACS and receive an abbreviated (or no) cardiac evaluation. Second, because the preferred treatment for stable patients is conservative medical management, failure to consider SCAD early in a patient's course may result in patients undergoing unnecessary attempts at revascularization or receiving medical therapy mistakenly aimed at atherosclerotic disease risk factors (3).

Goals of this Investigation

The goal of this investigation was to describe the initial presentation of patients with SCAD, including their symptoms, vital signs, electrocardiogram (ECG) and laboratory findings, management, and outcomes. Greater understanding of the range of presenting symptoms, risk factors, and early treatment of ACS due to SCAD may serve to increase physicians' awareness and improve their management of patients with SCAD.

MATERIALS AND METHODS

Study Design and Setting

This was a retrospective chart review using the electronic medical record (EMR) to identify consecutive adult patients seen in the emergency department (ED) for SCAD-related symptoms. The study was conducted at an academic medical center with approximately 70,000 annual visits. Records from January 1, 2002, when the ED began using electronic diagnosis coding, through October 31, 2015 were included. The institutional review board approved this study.

Setting and Selection of Participants

The EMR was searched using two different tools. First, all patients with coronary artery dissection, identified by International Classification of Diseases, Ninth Revision (ICD-9) code 414.12, were identified. Second, all patients identified by a Boolean search of "spontaneous" and "coronary" and "dissection" within the diagnosis field of the EMR were identified. The results of both of these searches were limited to include only patients evaluated in the ED within 2 weeks of their diagnosis of SCAD. Patients with iatrogenic coronary artery dissection and coexistent atherosclerotic coronary artery disease were excluded, as coronary dissection in these patients represents a different disease process.

Together, these search strategies identified 1684 patients, 19 of whom were included in the final study population representing a total of 20 separate SCAD episodes that were confirmed by angiography. A flow diagram showing how the study population was derived is provided in Figure 1. The majority of patients in the initial search did not have SCAD but were identified because the Boolean search tool did not consistently

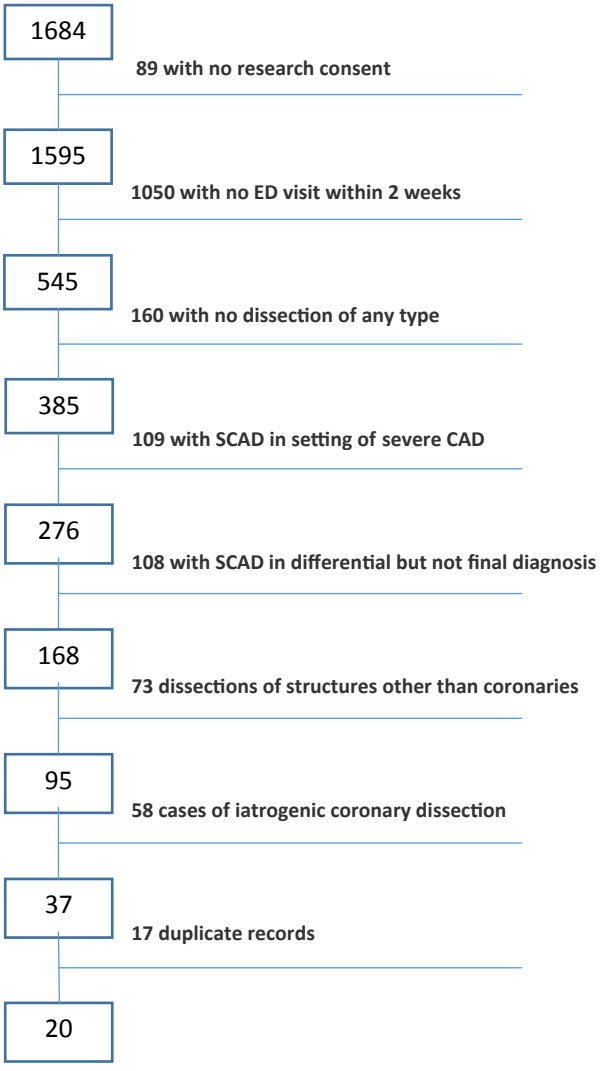

Figure 1. Selection of study participants from initial search of electronic medical record number of patient visits.