

# Comorbidity and medication use in patients with angina due to a coronary vasomotion disorder

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## Abstract

**Aim:** To describe the proportions of patients with concomitant morbidity and related medication use in an international, contemporary, clinical database.

**Methods:** TriNetX, a federated health research network with access to anonymized electronic medical records (EMRs) from participating healthcare organizations including academic medical centres, specialty physician practices, and community hospitals in the USA, was used. The ICD10 code (I20.1) representing 'Angina pectoris with documented spasm' was used as a primary search term. ICD10 codes were also used for cardiorenal and metabolic conditions, medication use was also analysed. The analysis population was defined as occurring between 01.01.2017 – 31.12.2019. The population age was ≥18 years.

**Results:** Data were available on 12,200 individuals (mean (SD) age 63 (13) years; 63% female). The % of individuals with a concomitant diagnosis is described in Table 1. Hypertension occurred in almost two thirds of individuals, anxiety disorder affected more than one quarter, and type 2 diabetes and/or obesity occurred in one fifth. Medication use is described in Table 2. Half of patients received a calcium channel blocker therapy. Nitroglycerin, beta-blockers, and isosorbide mononitrate were less commonly used (45%, 45% and 23%, respectively). Most patients (58%) were prescribed an antacid. Half of patients received statin treatment (50% overall; 36% atorvastatin). Insulin (12%) and metformin (9%) were the most commonly prescribed antidiabetic medication

**Conclusions:** Angina associated with coronary spasm is found more frequently in females and those with cardio-metabolic risk factors. Contemporary pharmacotherapy for diabetes and statins appear to be under-used.

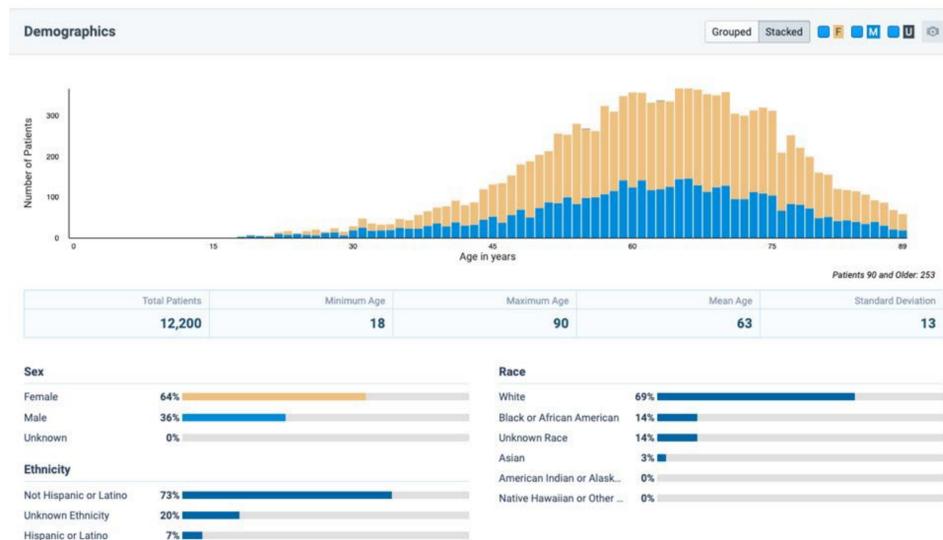
## Introduction

Microvascular angina and vasospastic angina are disorders of coronary vasomotion. The associations between these conditions, comorbidity and medication use in relatively unselected populations is not well described. We aim to describe the proportions of patients with concomitant morbidity and related medication use in an international, contemporary, clinical database.

## Methods

TriNetX, a global federated health research network with access to anonymized electronic medical records (EMRs) from participating healthcare organizations including academic medical centres, specialty physician practices, and community hospitals, predominantly in the USA was used. The ICD10 code (I20.1) representing 'Angina pectoris with documented spasm' was used as a primary search term. ICD10 codes were also used for cardiorenal and metabolic conditions. Medication use was classified as occurring prior to or on the date of the angina episode. The time-period for defining the analysis population was 01.01.2017 – 31.12.2019. The population age was ≥18 years

Figure 1: Demographics



Generated by TriNetX

## Results

2/3rds of patients identified are diagnosed with essential hypertension, and approximately 1/5<sup>th</sup> of patients have either Type 2 diabetes or obesity, with slightly smaller percentages diagnosed with heart failure, chronic kidney disease or having undergone a coronary revascularization procedure.

Table 1 : Comorbidities

Comorbidities *(note: anytime before or on first MVA event)	n (%)
T2D	2,590 (21%)
Essential Primary Hypertension	8,080 (66%)
Heart Failure	2,210 (18%)
Obesity	2,670 (22%)
NASH	90 (0.7%)
Acute kidney failure	950 (7.8%)
Chronic kidney disease	1,790 (14.7%)
Coronary Revascularisation Procedure	1,840 (15%)
Menopause	1,400 (11%)
Anxiety disorder	3,400 (28%)
Smoking	870 (7.1%)

Usage rates for a number of medications with data demonstrating renal and cardiovascular protection are low given the risk profile described above. Particularly low rates of both ACE inhibitors and SGLT-2 inhibitors are seen.

Table 2: Medication usage rates

Variable	N (%)
<b>Medications *(note: anytime prior to or on first MVA event)</b>	
SGLT-2 inhibitors	90 (0.7%)
ARBs	1,670 (14%)
ACE inhibitors	3,120 (26%)
Anti-anginals 8,660 (71%)	
Beta blockers	5,430 (45%)
Ca2+ antagonists	6,150 (50%)
Oral nitrates	3,010 (25%)
Nitroglycerin	5,540 (45%)
Metformin	1,090 (8.9%)
Insulin	1,420 (12%)
Antacids	7,050 (58%)
Calcium tablets	2,910 (24%)
Vitamin D tablets	2,110 (17%)
Mineralocorticoid receptor antagonists	850 (7.0%)
DPPIV inhibitors	270 (2.2%)
Statins	6160 (50%)
GLP-1 antagonists	140 (1.1%)
Platelet aggregation inhibitors	6820 (56%)

## Updated analysis:

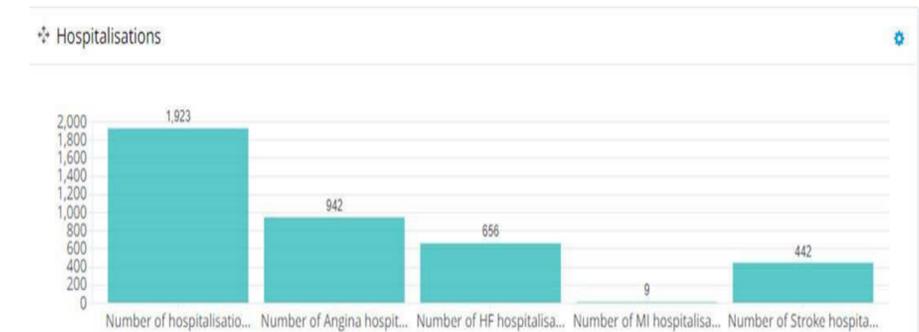
After abstract submission the team performed a further analysis to look at outcomes in the year following diagnosis of MVA. This was conducted using similar methodology to the characterization study but utilizing the Optum database rather than TriNetX.

This showed significant mortality and morbidity in 11,508 patients with coronary vasomotion disorder.

Table 3: Outcomes

Statistic	Value	%
<b>Outcome</b>		
<b> Cohort</b>		
MVA	11,508	100 %
<b> Hospitalisation or death within 1 year post MVA index</b>		
N	1,532	13.3 %
<b> Hospitalisation within 1 year post MVA index</b>		
N	1,297	11.3 %
<b> Death within 1 year post MVA index</b>		
N	369	3.2 %
<b> Number of hospitalisations within 1 year post MVA index</b>		
Sum	1,923	

Figure 2: Breakdown of hospitalisations



## Conclusion and discussion

- These data confirm that patients with coronary vasomotion disorder have a very adverse cardiometabolic risk profile including high background rates of obesity, heart failure, coronary artery disease, renal impairment and Type 2 diabetes
- Despite this background risk profile, rates of cardio and renal protective medication usage are low, particularly with respect to ACE inhibitors and SGLT-2 inhibitors. Given recent evidence a re-analysis, particularly with respect to SGLT-2 inhibitor use is warranted
- The mortality rate at one year for patients diagnosed with coronary vasomotion disorder is very high at over 13%
- Better treatment is required for this under-recognized disorder, both with respect to symptom control and management of cardiovascular and metabolic risk factors

