Myocardial Infarction with Non-Obstructive Coronary Arteries (MINOCA) Diagnosis and Management in a Private Healthcare Setting - A Single Centre Retrospective Data Analysis

Simone Gong[1,2], Michelle Berry[1,2], A/Prof Monique Watts[1,3]

[1] Epworth Healthcare, [2] University of Melbourne, [3] Alfred Health

Epworth Research

Background

Myocardial infarction with nonobstructive coronary arteries (MINOCA) is a heterogeneous term encompassing patients with acute myocardial infarction (AMIs) who do not have sufficiently obstructed coronary arteries to compromise myocardial blood flow (Fig.1). MINOCA incidence varies in literature from 1-15% of all AMIs referred for coronary angiography [1-3], but remains largely uncharacterised, and thus under-diagnosed and under-managed in Australia.
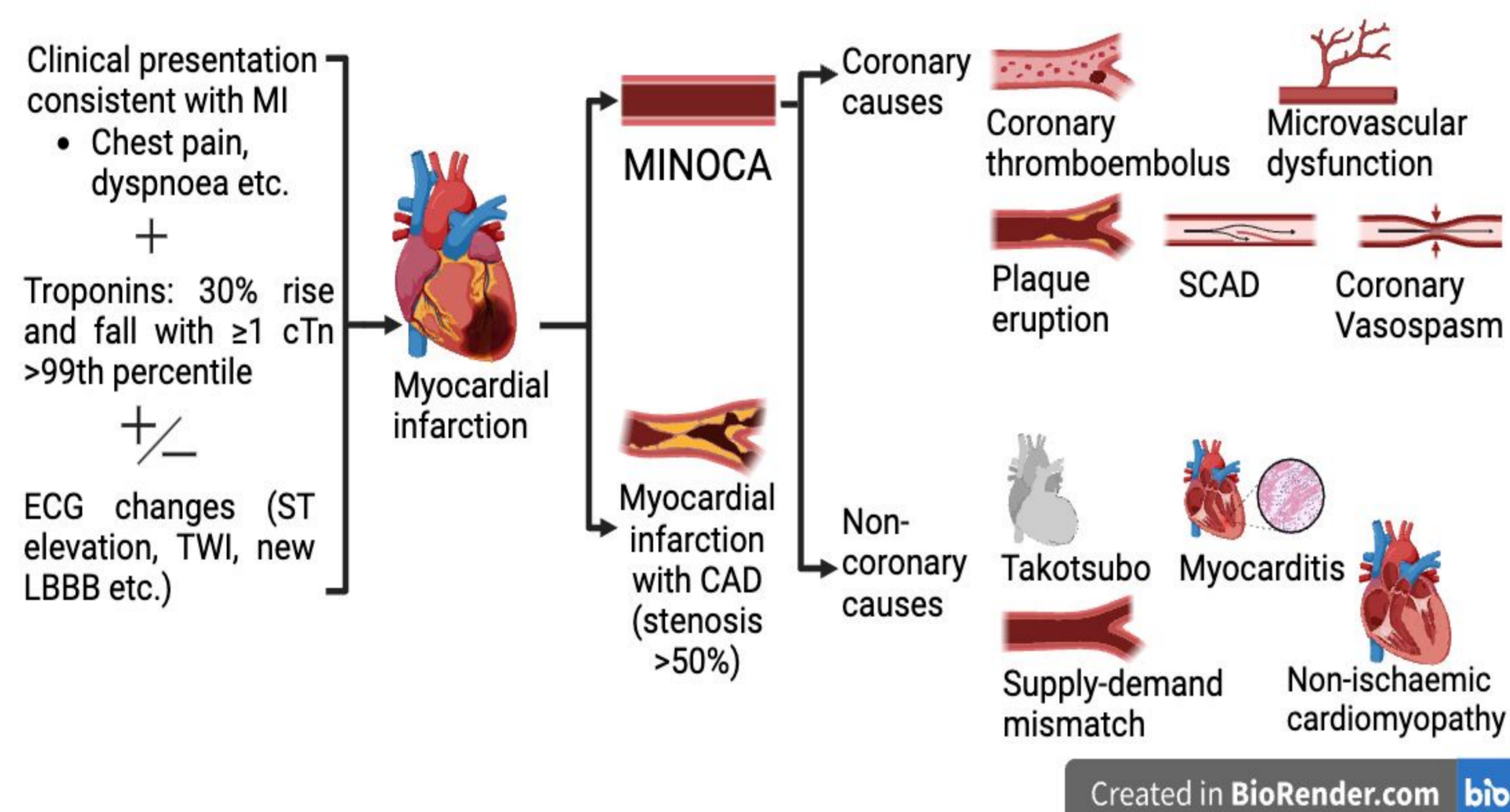

Figure 1: Visual representation of myocardial infarction (MI) classification, including the pathophysiology of MINOCA [3]; Coronary Artery Disease (CAD), Left Bundle Branch Block (LBBB), Spontaneous Coronary Artery Dissection (SCAD), T Wave Inversion (TWI)

Aims

To investigate the incidence, assessment and management of MINOCA at our institution.

Methodology

The Victorian Cardiac Outcomes Registry (VCOR) database was cross-checked with the hospital's patient management system (IPM) for patients who received a discharge diagnosis of 'Acute Myocardial Infarction' during 2022-2023. Only patients who underwent coronary angiography and had biochemically proven MI were included.
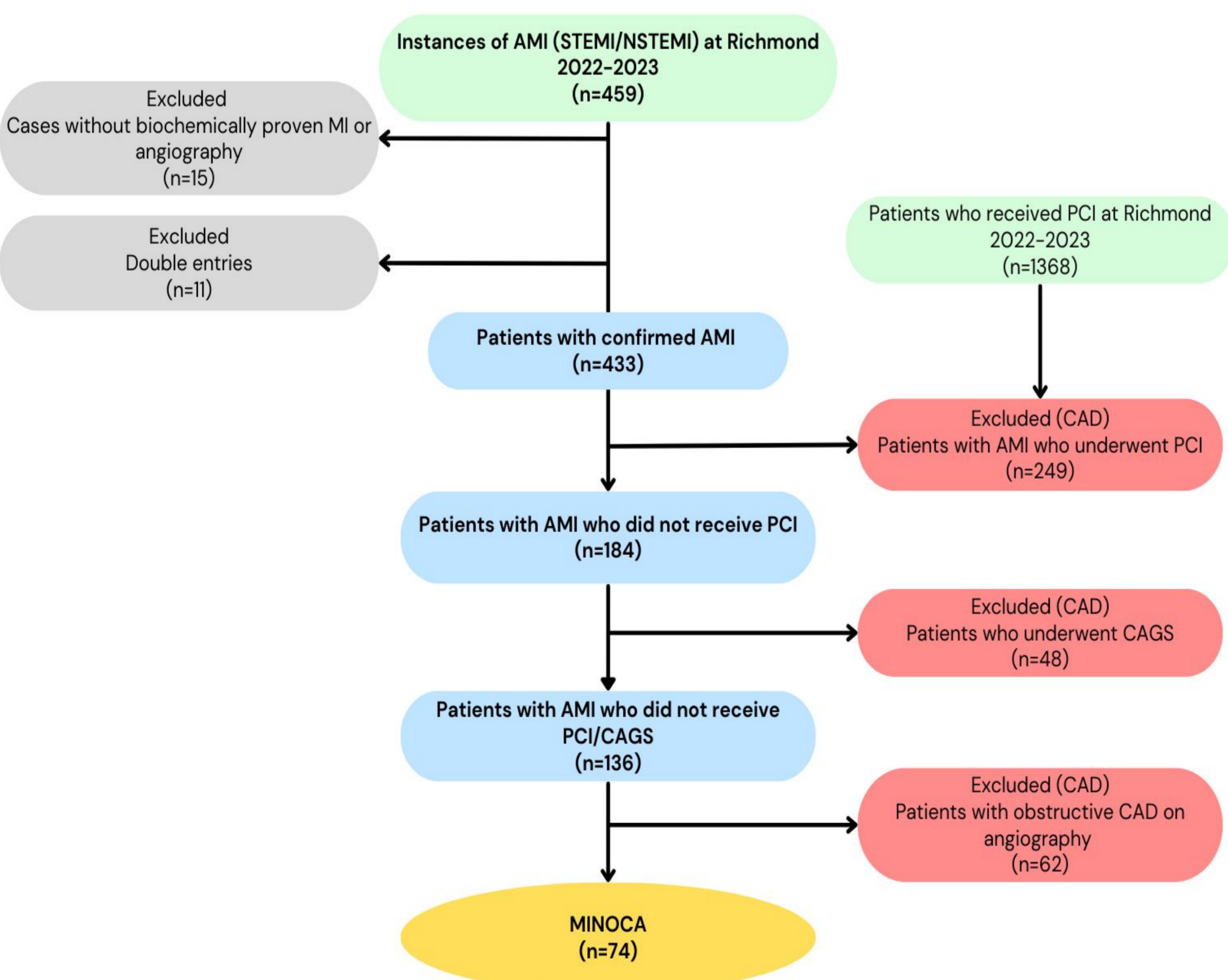

Figure 2: Visual representation of methods; Coronary Artery Graft Surgery (CAGS), Coronary Artery Disease (CAD), Myocardial Infarction (MI), Percutaneous Coronary Intervention (PCI)

Results

74 out of a total of 433 patients with confirmed AMI were found to have MINOCA (17%). These patients were further characterised by pathophysiological MINOCA subtype, and are shown in Table 1. MINOCA patients were likely to be female (70%), with average BMI of 28 ± 6 and age of 70 ± 12.

Table 1: Incidences of MINOCA categorised by aetiology. Frequencies expressed as n (%).

MINOCA Aetiology	Frequency (n=74)
Unknown	34 (46%)
Type 2 MI (Supply-Demand Mismatch)	24 (32%)
Takotsubo	8 (11%)
Myocarditis	3 (4%)
SCAD	2 (3%)
Coronary Vasospasm	1 (1%)
Microvascular Dysfunction	1 (1%)
Myocardial Bridge	1 (1%)
Coronary Embolism/ Thrombus	0 (0%)
Plaque Erosion	0 (0%)

Of the 34 patients who had a MINOCA of unknown cause, only 15 (44%) patients had a discharge diagnosis of MINOCA. Of those 15 patients, five received appropriate further outpatient investigations such as cardiac MRI and coronary vasomotor testing. Excluding supply-demand mismatch, the treatment pathways for those with known MINOCA aetiologies are shown in Table 2.

Table 2: Optimal and actual treatment pathways for MINOCA aetiologies. Green and yellow indicate optimal management and additional management options respectively [3,4]. Numerical data then represents the number of patients with that MINOCA aetiology who received appropriate treatment.

	ACEi/ ARB	Anti-Inflam.	Aspirin	BB	CCB	DAPT	Nitrates	Statin
Takotsubo (n=9)	8			9				
Myocarditis (n=3)		1						
SCAD (n=2)			2	2		1		
Coronary Vasospasm (n=1)			1		0		0	1
Myocardial Bridge (n=1)			1	0	1	1		
Microvascular Dysfunction (n=1)					1		0	1
Coronary Embolism (n=0)								
Plaque Erosion (n=0)								

Abbreviations: Angiotensin Converting Enzyme Inhibitor (ACEi), Angiotensin II Receptor Blocker (ARB), Anti-Inflammatory such as colchicine or prednisolone (Anti-Inflam), Beta-Blocker (BB), Calcium Channel Blocker (CCB), Dual-Antiplatelet Therapy (DAPT), Spontaneous Coronary Artery Dissection (SCAD)

Conclusions

MINOCA is a common condition, with the prevalence found to be 17% amongst MIs referred to coronary angiography at our centre. In many of these instances, definitive diagnosis was not achieved. Low levels of identified coronary causes potentially indicates an opportunity for utilisation of further interventional techniques to improve diagnosis. Continued physician education has been shown to improve practice and patient outcomes [5].

References