University of Glasgow | Institute of Cardiovascular & Medical Sciences

NHS Golden Jubilee

Cumulative atherosclerotic burden in patients with or without microvascular angina.

Daniel Ang[1,2], Jaclyn Carberry[1,2], Colin Berry[1,2]

[1]British Heart Foundation Glasgow Cardiovascular Research Centre, Institute of Cardiovascular and Medical Sciences, University of Glasgow, Glasgow, UK. [2] West of Scotland Heart and Lung Centre, NHS Golden Jubilee, Clydebank, UK.

Introduction

Increased atherosclerotic burden is associated with worse prognosis. Microvascular angina (MVA) is present in approximately 50% of patients with angina and non-obstructive coronary artery disease (ANOCA). Despite recent guidelines, there remains variation in clinical practice when prescribing cardioprotective medication (particularly statins) for this population.

Aim: To determine the epicardial atherosclerotic burden in patients with ANOCA, specifically those with microvascular angina.

Methods

Study population: A series of 53 patients with ANOCA (***Figure 1***) undergoing thermodilution microvascular function testing at a tertiary care hospital between January and October 2021.

Patients were differentiated into those with and without MVA based on coronary function results (***Figure 2***). Cumulative atherosclerotic burden was assessed per patient using the **Gensini score**, and compared between groups.

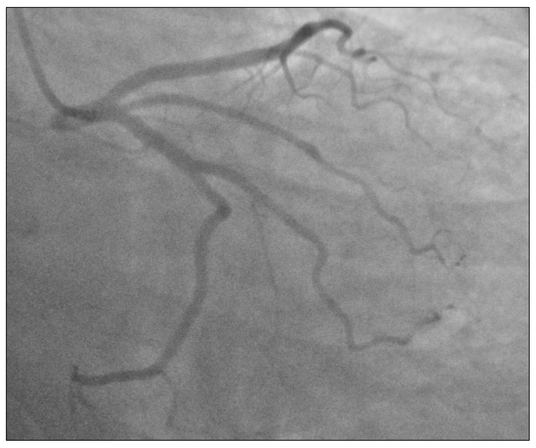

Figure 1: Clinical case of ANOCA. The epicardial coronary arteries were unobstructed (stenosis of <50% and/or FFR >0.80 in vessels of diameter ≥2.5mm).

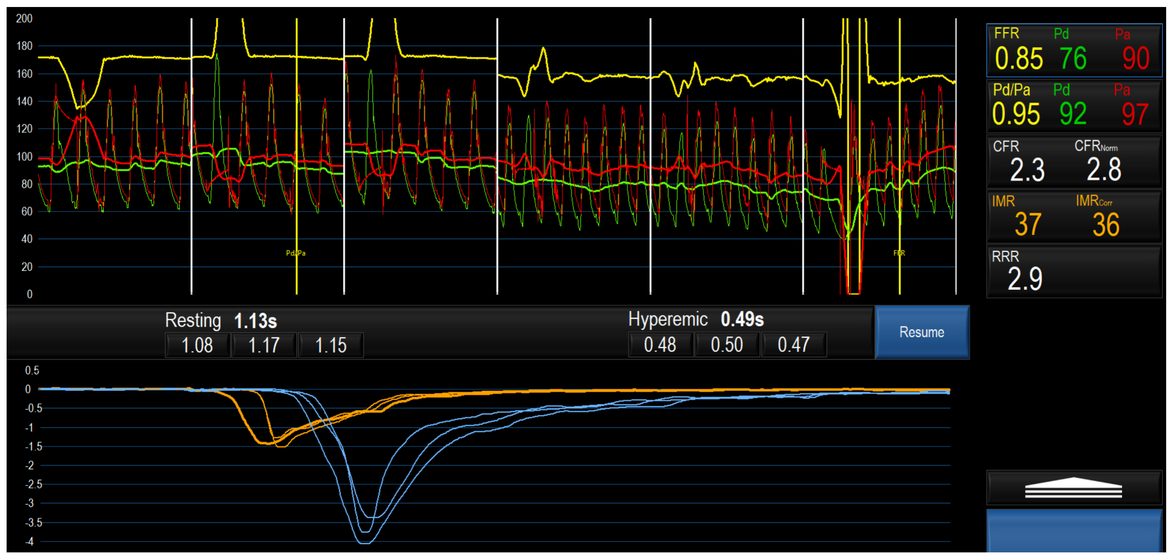

Figure 2: Example patient with microvascular angina. Microvascular function testing assessed using the principles of thermodilution transit times (reference cut-off for MVA= **CFR <2.0 and/or IMR ≥25**).

Results

Of *n*=53 patients, MVA was diagnosed in *n*=20 based on abnormal coronary function tests. Co-morbidities are summarised in ***Table 1*** and mean Gensini Scores in ***Figure 3*** below:

	MVA (*n*=20)	No MVA (*n*=33)
Age	62 (7)	58 (8)
Male	9 (45%)	15 (46%)
BMI	31 (7)	31 (6)
Smoking history	12 (60%)	16 (48%)
Diabetes mellitus	2 (10%)	9 (27%)
Hypertension	10 (50%)	13 (39%)
Atrial fibrillation	0 (0%)	2 (6%)
COPD	4 (20%)	8 (24%)
Liver disease	1 (5%)	1 (3%)
Previous MI	2 (10%)	4 (12%)
Previous CVA/TIA	2 (10%)	2 (6%)

Table 1: Baseline characteristics and comorbidities.

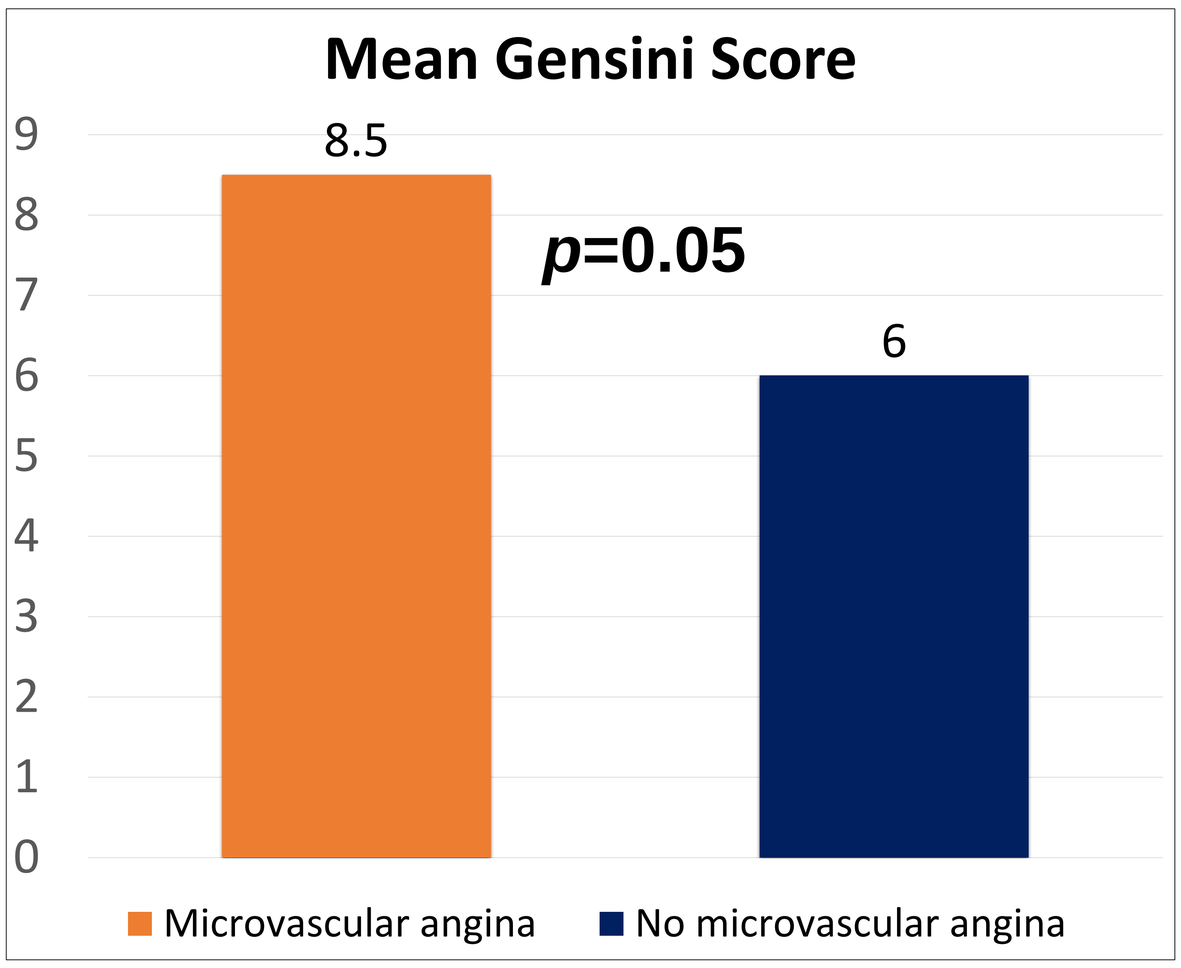

Figure 3: Mean Gensini scores in MVA and non-MVA.

Conclusion

MVA is associated with a higher epicardial cumulative atherosclerotic burden, which might explain its association with major adverse cardiovascular events. These results support the routine prescription of cardioprotective medication, in particular statins.