Table 1 compares the advantages and disadvantages of non-invasive CMR and invasive CTP and PET images commonly used in clinical settings.

Imaging modality	Technique	Advantages	Disadvantages
CMR	– Dynamic acquisition of first-pass perfusion during vasodilator-induced stress, followed by rest imaging. – Use of gadolinium-based intravenous contrast agent	– High spatial resolution. – Nil radiation exposure – Ability to evaluate all coronary territories simultaneously	– High cost – Long examination protocols with varying patient compliance – Need to exclude obstructive CAD – Contraindicated for patient with severe renal disease, devices, arrhythmias
Transthoracic Doppler Echocardiography	– Broadband transducer with second harmonic capability and contrast-enhanced color Doppler	– Reproducible – Inexpensive – Minimally invasive – High correlation with invasive intracoronary measurement of flow velocity within	– Capable of detecting variations in coronary flow velocity but not absolute flow volume Operator dependent

		coronary arteries	
CT angiography with CT perfusion (CTP)	– Tracking of contrast passage from coronary circulation into the myocardium at rest and under pharmacologic stress.	– Combined capture of coronary structural imaging and perfusion metrics in one study session.	– Exposure to radiation and potential overestimation of myocardial blood flow (MBF). – Impaired Renal Function is a limitation
PET scan	– Stress and rest perfusion imaging using vasodilator agents	– Widely validated imaging technique. – Excellent diagnostic performance. – High-resolution images with short scan duration – . – Strong predictive value for clinical outcomes.	– Expensive Exposure to radiation – Not widely accessible Lengthy and time-intensive process

		– Minimal exposure to radiation.	

Table 1: Techniques, advantages, and disadvantages CMR, CTP, and cardiac PET

Table 2: MBF and MFR-Based Classification of Coronary Microvascular Function

Type	Hyperaemic MBF	MFR	Interpretation	Potential Causes
Classical Type – Normal CMF	Normal	Normal	Preserved coronary microvascular function (though mild or diffuse coronary artery disease may still be present)	
Endogen Type – Normal CMF	Reduced	Matters more than MBF	Likely normal CMF despite low hyperaemic MBF (if no prior infarction and normal perfusion)	Low BP, athlete's heart, low HR, vagotonia, beta-blockers, myocardial infarction (if history present)
Classical Type – CMD	Reduced	Reduced	CMD or diffuse CAD with downstream hemodynamic effects	Hypertension, dyslipidaemia, smoking, diabetes
Endogen Type – CMD	Normal	Reduced	Likely due to increased resting MBF, reducing vasodilator capacity	Hypertension, insulin resistance syndromes, obesity, tachycardia, anxiety, vasodilator medications, renal impairment, hypermetabolic conditions

CAD: Coronary Artery Disease. **CMF**: coronary microvascular function. **CMD**: coronary microvascular dysfunction. **MFR**: Myocardial Flow Reserve. **MBF**: Myocardial Blood Flow.

Table 3: INOCA Endotypes and Diagnostic Criteria *

Endotype	Key Mechanism	Diagnostic Markers
Microvascular Angina (MVA)	Coronary microvascular dysfunction (CMD)	FFR > 0.8, CFR < 2.0, IMR ≥ 25, or HMR ≥ 1.9
Vasospastic Angina (VSA)	Epicardial spasm	FFR > 0.8, CFR ≥ 2.0, IMR < 25, or HMR < 1.9 **+** VSA criteria
Mixed MVA and VSA	CMD + epicardial spasm	CFR < 2.0, IMR ≥ 25, or HMR ≥ 1.9 **+** VSA criteria
Non-Cardiac Chest Pain	No ischemic cause	FFR > 0.8, CFR ≥ 2.0, IMR < 25, HMR < 1.9
Non-Flow-Limiting CAD	Diffuse atherosclerosis	<50% stenosis, FFR > 0.8, CFR ≥ 2.0

***** Hyperaemic indices
CFR: coronary flow reserve. **FFR**: Fractional flow reserve. **HMR**: hyperaemic myocardial velocity resistance. **IMR**: index of microvascular resistance. **VSA:** vasospastic Angina