TABLE 294-2 CLINICAL USE OF ANTITHROMBOTIC THERAPY

Oral Antiplatelet Therapy	
Aspirin	Initial dose of 325 mg nonenteric formulation followed by 75–100 mg/d of an enteric or a nonenteric formulation
Clopidogrel	Loading dose of 300–600 mg followed by 75 mg/d
Prasugrel	Pre-PCI: Loading dose 60 mg followed by 10 mg/d
Ticagrelor	Loading dose of 180 mg followed by 90 mg twice daily
Intravenous Antiplatelet Therapy	
Abciximab	0.25 mg/kg bolus followed by infusion of 0.125 μg/kg per min (maximum 10 μg/min) for 12–24 h
Eptifibatide	180 μg/kg bolus followed 10 min later by second bolus of 180 μg with infusion of 2.0 μg/kg per min for 72–96 h following first bolus
Tirofiban	25 μg/kg per min followed by infusion of 0.15 μg/kg per min for 48–96 h
Heparins[a]	
Unfractionated heparin (UFH)	[b]Bolus 70–100 U/kg (maximum 5000 U) IV followed by infusion of 12–15 U/kg per h (initial maximum 1000 U/h) titrated to ACT 250–300 s
Enoxaparin	1 mg/kg SC every 12 h; the first dose may be preceded by a 30-mg IV bolus; renal adjustment to 1 mg/kg once daily if creatine clearance <30 cc/min
Fondaparinux	2.5 mg SC qd
Bivalirudin	Initial IV bolus of 0.75 mg/kg and an infusion of 1.75 mg/kg per h.

[a]Other low-molecular-weight heparins exist beyond those listed. [b]If no glycoprotein IIb/IIIa inhibitor planned.

Abbreviations: ACT, activated clotting time for HemoTec; IV, intravenous; SC, subcutaneously.

Source: Modified from J Anderson et al: J Am Coll Cardiol 61:e179, 2013.

There is evidence of benefit with long-term therapy with five classes of drugs that are directed at different components of the atherothrombotic process. Beta blockers, statins (at a high dose, e.g., atorvastatin 80 mg/d), and ACE inhibitors or angiotensin receptor blockers are recommended for long-term plaque stabilization. Antiplatelet therapy, now recommended to be the combination of low-dose (75–100 mg/d) aspirin and a $P2Y_{12}$ inhibitor (clopidogrel, prasugrel, or ticagrelor) for 1 year, with aspirin continued thereafter, prevents or reduces the severity of any thrombosis that would occur if a plaque were to rupture.

Registries have shown that women and racial minorities, as well as patients with NSTE-ACS at high risk, including the elderly and patients with diabetes or chronic kidney disease, are less likely to receive evidence-based pharmacologic and interventional therapies with resultant poorer clinical outcomes and quality of life. Special attention should be directed to these groups.

TABLE 294-3 CLASS I RECOMMENDATIONS FOR USE OF AN EARLY INVASIVE STRATEGY IN PATIENTS WITH NON-ST-SEGMENT ELEVATION ACUTE CORONARY SYNDROME[a]

Class I (Level of Evidence: A) Indications
Recurrent angina at rest/low-level activity despite treatment
Elevated TnT or TnI
New ST-segment depression
CHF symptoms, rales, MR
EF <0.40
Sustained VT
PCI <6 months, prior CABG
High-risk findings from noninvasive testing
Hemodynamic instability
Mild-to-moderate renal dysfunction
Diabetes mellitus
High TIMI Risk Score (>3)[b]

[a]Any one of the high-risk indicators. [b]See Antman (JAMA 284:835, 2000).

Abbreviations: CABG, coronary artery bypass grafting; CHF, congestive heart failure; EF, ejection fraction; MR, mitral regurgitation; PCI, percutaneous coronary intervention; TIMI, Thrombolysis in Myocardial Infarction; TnI, troponin I; TnT, troponin T; VT, ventricular tachycardia.

Source: Modified from J Anderson et al: J Am Coll Cardiol 61:e179, 2013.

PRINZMETAL'S VARIANT ANGINA

In 1959 Prinzmetal et al. described a syndrome of severe ischemic pain that usually occurs at rest and is associated with transient ST-segment elevation. Prinzmetal's variant angina (PVA) is caused by focal spasm of an epicardial coronary artery, leading to severe transient myocardial ischemia and occasionally infarction. The cause of the spasm is not well defined, but it may be related to hypercontractility of vascular smooth muscle due to adrenergic vasoconstrictors, leukotrienes, or serotonin. For reasons that are not clear, the prevalence of PVA has decreased substantially during the past few decades.

Clinical and Angiographic Manifestations Patients with PVA are generally younger and have fewer coronary risk factors (with the exception of cigarette smoking) than do patients with NSTE-ACS. Cardiac examination is usually unremarkable in the absence of ischemia. The clinical diagnosis of PVA is made by the detection of transient ST-segment *elevation* with rest pain. Many patients also exhibit multiple episodes of asymptomatic ST-segment elevation (*silent ischemia*). Small elevations of troponin may occur in patients with prolonged attacks.

Coronary angiography demonstrates transient coronary spasm as the diagnostic hallmark of PVA. Atherosclerotic plaques in at least one proximal coronary artery occur in about half of patients, and in these patients, spasm usually occurs within 1 cm of the plaque. Focal spasm is most common in the right coronary artery, and it may occur at one or more sites in one artery or in multiple arteries simultaneously. Hyperventilation or intracoronary acetylcholine has been used to provoke focal coronary stenosis on angiography or to provoke rest angina with ST-segment elevation to establish the diagnosis.

TREATMENT PRINZMETAL'S VARIANT ANGINA

Nitrates and calcium channel blockers are the main therapeutic agents. Aspirin may actually increase the severity of ischemic episodes, possibly as a result of the sensitivity of coronary tone to modest changes in the synthesis of prostacyclin. The response to beta blockers is variable. Coronary revascularization may be helpful in patients who also have discrete, flow-limiting, proximal fixed obstructive lesions.

Prognosis Many patients with PVA pass through an acute, active phase, with frequent episodes of angina and cardiac events during the first 6 months after presentation. Survival at 5 years is excellent (~90–95%). Patients with no or mild fixed coronary obstruction tend to experience a more benign course than do patients with associated severe obstructive lesions. Nonfatal MI occurs in up to 20% of patients by 5 years. Patients with PVA who develop serious arrhythmias during spontaneous episodes of pain are at a higher risk for sudden cardiac death. In most patients who survive an infarction or the initial 3- to 6-month period of frequent episodes, there is a tendency for symptoms and cardiac events to diminish over time.