

However, in a substantial minority of patients, the quality of discomfort is extremely vague and may be described as a mild tightness, or merely an uncomfortable feeling, that sometimes is experienced as numbness or a burning sensation. The site of the discomfort is usually retrosternal, but radiation is common and generally occurs down the ulnar surface of the left arm; the right arm, both arms, neck, jaw, or shoulders may also be involved. These and other characteristics of ischemic chest discomfort pertinent to discrimination from other causes of chest pain are discussed later in this chapter (see “Approach to the Patient”).

Stable angina usually begins gradually and reaches its maximal intensity over a period of minutes before dissipating within several minutes with rest or with nitroglycerin. The discomfort typically occurs predictably at a characteristic level of exertion or psychological stress. By definition, unstable angina is manifest by anginal chest discomfort that occurs with progressively lower intensity of physical activity or even at rest. Chest discomfort associated with MI is commonly more severe, is prolonged (usually lasting ≥ 30 min), and is not relieved by rest.

Mechanisms of Cardiac Pain The neural pathways involved in ischemic cardiac pain are poorly understood. Ischemic episodes are thought to excite local chemosensitive and mechanoreceptive receptors that, in turn, stimulate release of adenosine, bradykinin, and other substances that activate the sensory ends of sympathetic and vagal afferent fibers. The afferent fibers traverse the nerves that connect to the upper five thoracic sympathetic ganglia and upper five distal thoracic roots of the spinal cord. From there, impulses are transmitted to the thalamus. Within the spinal cord, cardiac sympathetic afferent impulses may converge with impulses from somatic thoracic structures, and this convergence may be the basis for referred cardiac pain. In addition, cardiac vagal afferent fibers synapse in the nucleus tractus solitarius of the medulla and then descend to the upper cervical spinothalamic tract, and this route may contribute to anginal pain experienced in the neck and jaw.

■ OTHER CARDIOPULMONARY CAUSES