June 1992

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Recommended Citation

Infante, M.D., Ruth (1992) "Panic Disorder and Non-Cardiac Chest Pain: A Brief Review," *Jefferson Journal of Psychiatry*. Vol. 10 : Iss. 2 , Article 7.

DOI: <https://doi.org/10.29046/JJP.010.2.005>

Available at: <https://jdc.jefferson.edu/jeffjpsychiatry/vol10/iss2/7>

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Panic Disorder and Non-Cardiac Chest Pain: A Brief Review

Ruth Infante, M.D.

Abstract

The relationship between chest pain and panic disorder is explored; after coronary artery disease and other medical diseases have been ruled out, panic disorder remains a significant contributor to morbidity. Panic disorder is treatable; hence it is important that psychiatrists educate the non-psychiatric medical community so that appropriate referrals and treatment can be made. This would lead to a decrease in health care costs.

INTRODUCTION

For many years, clinicians have faced the difficulty of managing patients who complain of chest pain, yet who have little, if any, evidence of coronary artery disease. As a result, many of these patients continue to receive cardiac medications over extended periods of time even without evidence of improvement (1). Psychiatric disorders may be overlooked as a cause of chest pain and psychiatrists doing consultation work in the medical setting need to have a high index of suspicion. There is ongoing debate on the etiology of non-cardiac chest pain (2). This paper briefly reviews the recent psychiatric developments related to the topic of non-cardiac chest pain, and includes a brief discussion of the differential diagnosis with a focus on its relationship to panic disorder.

CHEST PAIN OF UNPROVEN ETIOLOGY

Recent studies document the prevalence of chest pain in patients with little, if any, evidence of coronary artery disease on angiograms. One report on the occurrence of chest pain in a family practice setting states that 50% of patients with chest pain had unknown etiology after a 6-month period of follow-up (3). In a cardiology clinic setting, approximately 33% of patients referred for chest pain had no evidence of coronary artery disease on angiogram; another 16% had minimal evidence of disease that was insufficient to explain the symptom of chest pain (4). A similar study showed that 37% of patients had disease insufficient to explain the complaint of chest pain with over 60% of this group having completely normal coronary angiograms (5). These figures clearly indicate that the occurrence of chest pain with insufficient clinical evidence of disease is not uncommon; this is not an insignificant problem. The cost for an organic work-up is approximately \$4354 (6). A recent North Carolina

study estimated that each patient with non-cardiac chest pain spends about \$3500 per year to manage the pain. If these figures are applied to the estimated 90,000 patients diagnosed per year with non-cardiac chest pain, the health care costs exceed 315 million dollars (7). This is a staggering figure!

DIFFERENTIAL DIAGNOSIS

Chest pain in patients with angiographically normal coronary arteries may be of cardiac or non-cardiac origin. Among the cardiac causes are pericardial disease, valvular disease (mitral valve prolapse), hypertensive heart disease, and chest pain due to coronary artery spasm (8). In addition, Cannon and Epstein have described an entity called "microvascular angina" which they found in a sizeable percentage of patients who complained of chest pain and had no evidence of coronary artery disease on angiogram. This condition describes the presence of true myocardial ischemia caused by a disorder of the coronary microvasculature (9).

Non-cardiac causes of chest pain are principally esophageal, rheumatologic, pulmonary, and psychiatric (8). In addition to panic disorder which will be discussed further, increased neuroticism (as determined by higher scores on psychologic measures of anxiety, depression and somatization) was associated with increased somatic complaints including that of chest pain (10); it was also found that type A behavior (characterized by patterns of great drive, ambition, drive for recognition, sense of urgency and competitiveness) was a common feature among patients with non-cardiac chest pain (11).

NON-CARDIAC CHEST PAIN AND PANIC DISORDER

Studies have indicated that 34 to 40% of patients with chest pain and normal or near normal coronary arteries meet the criteria for panic disorder (12,13,14). However, the chest pain associated with panic disorder is usually described as atypical or non anginal; 30-40% of patients with atypical angina met criteria for panic disorder whereas none of the patients with typical angina had panic disorder (13,14). The patients who had atypical angina who met criteria for panic disorder were primarily women in their early 40's (15).

MECHANISM OF CHEST PAIN IN PANIC DISORDER

Proposed mechanisms for the development of chest pain in patients with panic disorder include hyperventilation (16) and a dysfunction in the locus ceruleus of the brain (17). Discomfort associated with breathing can arise from overuse of the thorax muscles alone; excessive use of these muscles together with localized muscular spasm induced by hyperventilation frequently causes precordial chest pain (18). Hyperventilation or overbreathing causes hypocapnia which through a series of pathophysiological mechanisms, increases neuromuscular excitability (18). Increased amounts of circulating catecholamine proposed to arise from abnormally high reactivity in the

brain noradrenergic systems, primarily in the locus ceruleus, is related to pathologic forms of anxiety (17); its afferent and efferent neuronal pathways project to and from many areas of the brain believed to mediate behavioral responses to pain and "fear-anxiety like" animal behaviors (17).

PSYCHOLOGICAL MORBIDITY

In spite of the excellent prognosis that patients with non-cardiac chest pain have, they continue to exhibit increased morbidity with continued complaints of chest pain and with social and work dysfunction (13,19,20). Follow-up studies of these patients reveal more frequent use of emergency rooms, general medical, and psychiatric care facilities and the increased use of numerous medications. These patients continue to complain of more physical restrictions associated with limited exertional capability and worsening health; they report increased incidences of depression and anxiety. Knowledge and reassurance of benign coronary arteries resulted in no improvement in psychiatric morbidity (1,9,19,21).

MANAGEMENT

Modalities of treatment are available for the management of panic disorder. Pharmacologic management includes the use of high-potency benzodiazepines such as clonazepam, lorazepam, and alprazolam (22). However, a study focusing on the treatment of patients with panic disorder who have chest pain, cites the particular usefulness of alprazolam (23). The efficacy of antidepressants is also evident; however, the side effects they may provoke, such as increased heart rate and dizziness, may make the patient feel more sick (22,24). In order to assure compliance it becomes necessary to inform the patient of these side effects and to start at a very low dose. Monoamine-oxidase inhibitors are also beneficial; they may have fewer side effects however, the need for avoiding specific medications as well as the need for dietary restrictions do not make this a first-line drug of choice (22,24). Behavioral treatment focusing on controlled breathing and relaxation training showed a marked decrease in the frequency and the intensity of chest pain (25). Of course, the optimal treatment of panic disorder would be a combination of psychotherapy and medication (26).

CONCLUSION

Chest pain in the absence of significant coronary artery disease, when other medical diseases have been ruled out, is not an uncommon finding. Non-cardiac chest pain is strongly associated with panic disorder, and a high index of suspicion is necessary in evaluating these patients. Panic disorder is treatable and once diagnosed, appropriate management can ensue.

As psychiatrists working in the medical setting, it is important to educate our non-psychiatric colleagues in recognizing this entity so that appropriate consulta-

tions and referrals are made. Appropriate management reduces the risk of iatrogenic complications including the use of unnecessary medications reduction in the number of visits and lengths of hospital stays and ultimately decreasing health care costs.

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