

Myocardial Infarction and Denial

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Denial, a natural defense mechanism, can be either an appropriate or an inappropriate response to anginal pain. Myocardial infarction sufferers often delay several hours before seeking medical attention, and most deaths from infarction occur before hospitalization. These two facts indicate that denial may contribute to mortality from coronary artery disease. To encourage "stoical" patients to seek medical care, nonthreatening educational approaches to cardiac disease and concentrated efforts to reduce anxiety toward hospitals are needed. Family physicians knowledgeable about the effects of denial can screen cardiac-prone patients for inappropriate denial and alter diagnostic approaches in an attempt to lessen the role denial plays in cardiac deaths.

Myocardial infarction, as dramatically as any medical illness, brings people face to face with mortality. How do humans respond to a life-threatening situation? To a certain extent, all people cope with fear by utilizing denial. This primitive defense mechanism distances the threat of death and shields the individual from overwhelming anxiety.

The following case illustrates how denial led a patient to delay seeking care for a myocardial infarction. Family physicians screen numerous people for cardiac risk factors. With the knowledge that dysfunctional denial can also pose a significant risk, physicians can identify patients with inappropriate denial and modify management strategies.

CASE STUDY

At the urging of his wife, a 37-year-old midlevel executive of a fast-food franchise, J.W., came to my office after experiencing 24 hours of chest pain. On the previous day he had traveled 200 miles to open a new restaurant. One hour before the opening ceremony, he experienced severe substernal chest pain that he described as similar to indigestion. He also experienced mild dyspnea and intense diaphoresis. He did not have arm or neck pain, nausea, or vomiting.

Submitted, revised, October 21, 1988.

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Initially, J.W. drank ice water and took antacids. These provided him no relief. He felt hot, and his sweating increased profusely. He then entered a meat freezer and sat almost 30 minutes, until most of his pain and sweating had stopped. After leaving the meat freezer, J.W. completed the two-hour opening ceremony and drove the 200 miles back home. He continued to have substernal chest pain intermittently throughout the night and into the next morning, when he was admitted to the hospital.

When asked why he did not seek help for his symptoms, J.W. said he was much too busy to go see a physician. He stated that he briefly considered the possibility of a heart attack but felt that this could not happen to him. On further questioning, he admitted that one month earlier he had undergone a complete physical examination and had been warned that he was at high risk for a heart attack. His cardiac risk factors included smoking three packs per day, elevated cholesterol levels with a high-density lipoprotein cholesterol of 0.80 mmol/L (30 mg/dL), a stressful job routine incorporating 50,000 miles of driving yearly during 12- to 14-hour work days, and uncontrolled hypertension with systolic blood pressures averaging 200 to 210 mmHg and diastolic pressure in the range of 100 to 120 mmHg. He rarely took his metoprolol or furosemide, both of which had been prescribed for his hypertension.

At admission he appeared in mild discomfort but no distress. Vital signs were remarkable for a blood pressure of 210/120 mmHg, apical pulse of 64 beats per minute, and a respiratory rate of 16/min. Fundi showed grade 2 changes. There were no other significant physical findings, and both cardiac and pulmonary examinations were normal. Laboratory findings suggested myocardial infarction with a total creatine phosphokinase value peaking at 17.27 μ kat/L (1036 U/L) (five times normal) with 0.17 MB

fraction, serum glutamic oxaloacetic transaminase of two times normal, lactic acid dehydrogenase 1.5 times normal, and a white cell count of $14.4 \times 10^9/L$ ($14.4 \times 10^3/\mu L$). An electrocardiogram showed deep T wave inversions in leads 1, aV_L, V₅ and V₆; an axis of -30 degrees; and poor R wave progression in V₁, V₂, and V₃.

With the above findings, J.W. was admitted to the cardiac care unit and treated as a subendocardial myocardial infarction patient. His chest pain resolved on β -blockers, nitrates, and nifedipine. His blood pressure stabilized at 130/90 mmHg on these medications plus a hydrochlorothiazide-triamterene combination. After an uneventful one-week stay, he was put on an outpatient cardiac rehabilitation regimen and discharged.

TYPES OF DENIAL

Denial may serve either a functional or dysfunctional role in helping an individual cope with the symptoms of myocardial infarction. Degrees of denial fall into three categories¹:

1. An appropriate level of denial elicits a measured response to a threatening situation. Patients in this category are able to rationally view and come to terms with their condition, allowing anxiety to be replaced with positive plans for the future.

2. A weak level of denial leads patients to be passive and compliant. Their attitude becomes dysfunctional as they repeatedly seek care for multiple concerns and minor symptoms. Rather than looking toward the future and becoming independent, these patients cling to their illness. Many patients that physicians term "cardiac cripples" fall into this category.

3. Finally, patients with a strong level of denial inappropriately respond to life-threatening situations by ignoring the relevance of their symptoms. Patients in this category accept medical help only when someone else brings them to a physician, and even then they rarely heed medical advice.² Physicians often refer to these patients as stoic and marvel at their tolerance for pain.

In *The Denial of Death*, Becker³ describes this last method of denial as heroism. Literature of all cultures extols the virtues of heroes. Heroes face and defy death without any fear, bravely risking what others would not. A study by Olin and Hackett⁴ found that, of 32 patients who denied chest pains during acute myocardial infarction, only one mentioned any fear of death. This lack of fear reflects what Becker would consider heroic behavior.

Similarly, the behavioral patterns described in J.W.'s case fit the description of heroic behavior and showed typical features of strong denial. One month prior to admission, J.W.'s physician specifically warned him that he was at high risk for myocardial infarction, yet he claimed

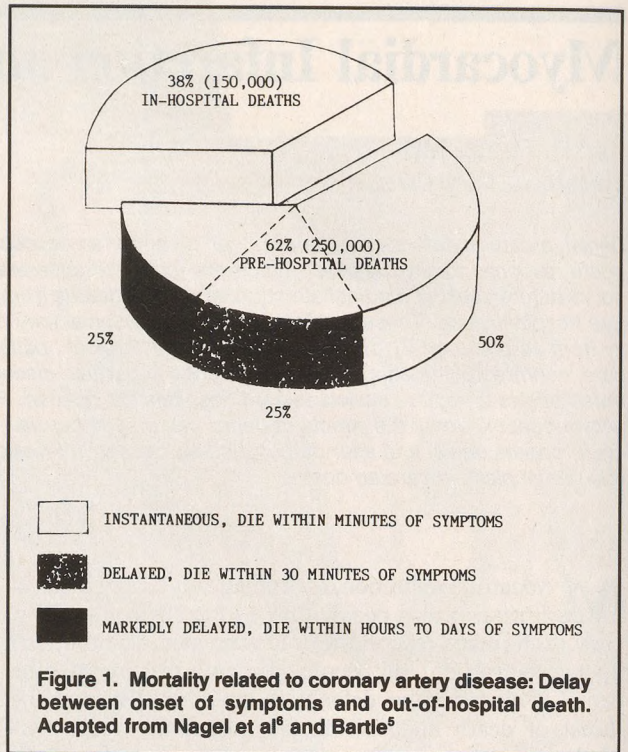


Figure 1. Mortality related to coronary artery disease: Delay between onset of symptoms and out-of-hospital death. Adapted from Nagel et al⁴ and Bartle⁵

no concern about this warning even during his bout of chest pain. Throughout hospitalization, J.W. acted as if immortal, exhibited no fear of death, and in spite of positive enzyme and electrocardiographic changes, refused to admit that he had had a myocardial infarction. His sense of heroism was further displayed when he said he had to carry on, as only he could open up the fast-food franchise. Even in coming to the hospital, J.W. insisted he felt no weakness and that he had only come because of his wife's urging.

SIGNIFICANCE OF DENIAL, THE MORTALITY RATE, AND PRE-HOSPITAL OUTCOME

J.W. was not unusual in that his myocardial infarction occurred 24 hours prior to hospitalization. Of the 400,000 deaths related to coronary artery disease in the United States yearly, approximately 62 percent (250,000) occur out of hospital.⁵ In one study, pre-hospital deaths were divided into three categories: (1) instantaneous, occurring within minutes of symptoms (125,000), (2) delayed, dying within 30 minutes of symptoms (62,500), and (3) markedly delayed, occurring hours to days from the onset of symptoms (62,500)⁶ (Figure 1). Denial clearly contributes

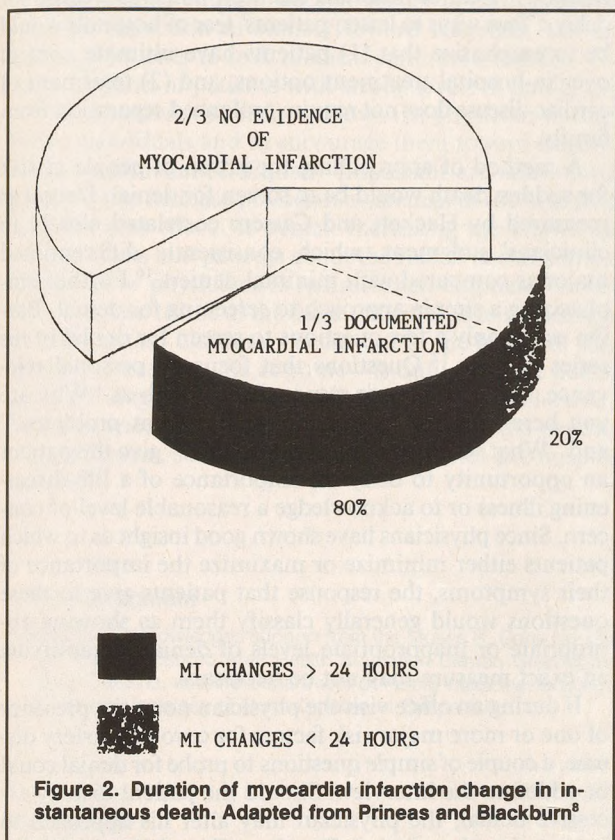


Figure 2. Duration of myocardial infarction change in instantaneous death. Adapted from Prineas and Blackburn⁸

to mortality in the markedly delayed group, and it may also be a significant factor for those who die within 30 minutes of symptoms. In any case, both groups, even including those persons who lived within minutes of a hospital,⁷ failed to seek medical care promptly.

Initially, it would appear unlikely that denial is a contributing factor in instantaneous deaths. Autopsies of those who died instantaneously, however, show that one third had a myocardial infarction (41,700), and of these, 80 percent (33,350) showed pathological changes of a myocardial infarction greater than 24 hours old⁸ (Figure 2). This finding suggests that individuals in this group either had a so-called silent myocardial infarction or had been denying symptoms for as long as 24 hours. Add to this group the group of 125,000 people who delay seeking care, and denial clearly has a significant impact on pre-hospital mortality. Obviously, since denial mechanisms cannot be assessed effectively in the group of people who die before they reach a hospital, much of the clinical inference must come from studies conducted on patients in the hospital environment.

DENIAL DURING HOSPITALIZATION

Studies of patients suffering acute myocardial infarction (≤ 72 hours) have suggested superior outcomes for those who show a high level of denial.⁹⁻¹¹ During the first three days of hospitalization, arrhythmias, tachycardia, strong anxiety, and elevated blood pressure levels all increase mortality. In the coronary care unit setting, patients with strong denial experience fewer of these problems, perhaps because of less adrenergic nervous system stimulation. The presence of any of these physical changes worsens prognosis, and since strong denial lessens these, survival may improve for the first 48 to 72 hours.¹⁰ Additionally, Bar-On¹² notes that in this early phase, it is helpful to see a myocardial infarction as personally irrelevant, which is a characteristic of patients with strong denial. For example, when the patient in the next room is dying of a myocardial infarction, denial can function as an adaptive coping mechanism, allowing one to believe "this cannot happen to me."

DENIAL IN REHABILITATION

Patients need totally different coping strategies during long-term rehabilitation and the late phase of acute myocardial infarction. For a rehabilitation program to be successful, denial must lessen and personal relevance must increase if the patient is to develop the coping skills needed to change lifestyle behaviors. In this phase, patients who persist with strong denial may have unfavorable outcomes. Conversely, vulnerability should not become so strong that patients will be unduly alarmed by minor symptoms. Responsibility and judgment need to shift steadily to the patients so that they regain a sense of control over their lives and become the primary motivators for the ongoing rehabilitation process.

The cardiac rehabilitation patient and the patient in the late phase of acute myocardial infarction face obvious risks from dysfunctional denial. If their denial is minimal, they become cardiac cripples, afraid to participate in any activity or to experience any symptom because of the fear of death. Conversely, the patient with the more stoical attitude ignores the return of angina or other symptoms and becomes another out-of-hospital death statistic.

METHODS OF MEASURING DENIAL

To effectively change those treatment strategies based on denial, physicians first need a method to assess denial accurately. Although quantifying and validating behavioral characteristics poses unique difficulties, a number of

scales measuring denial have been developed and utilized in multiple clinical trials.^{10,13-15} The best-known scale is that of Hackett and Cassem.¹⁶ This scale stemmed from a 1964 study by Olin and Hackett that reviewed 32 patients hospitalized at Massachusetts General Hospital.⁴ They noted that myocardial infarction patients would go to extremes to attribute chest pain to causes other than the heart. From this study, Hackett and Cassem developed an interview technique consisting of a few structured questions, such as "What did you feel caused your chest pain?" The interviewers rated patients on a 31-item scale that indicates behavior typically seen in patients who deny major illness. This denial scale significantly distinguished three groups that they labeled as major, partial, and minimal deniers. For example, if the patient stated in the interview that "nothing was really wrong with me" or that "I'm really not worried about my heart," these answers would be scored as showing major denial. Interrater reliability and comparisons with clinical observers have been consistently significant.¹⁶

MANAGEMENT STRATEGIES

Since both excessive and insufficient denial lead to clinically unacceptable outcomes, new thought is needed on treatment approaches that may contribute to inappropriate denial. Public information concerning cardiac disease must be nonthreatening, or denial will increase. Unfortunately, television advertisements emphasize the drama of coronary care by showing sirens blaring and medics frantically doing cardiopulmonary resuscitation.⁵ To succeed in reaching stoical patients, the emphasis must be on the nonlethal aspects of heart disease. The first mention in a public awareness program should not be of angioplasty, coronary artery bypass surgery, or similarly invasive approaches, but rather should stress the successful outcome of patients who come to the hospital early.

Over the past decade mortality statistics for cardiac disease have dramatically improved, obscuring many difficulties that persist for patients with ischemic heart disease. For example, technological advances may not alter the impact of cardiac disease on the quality of life. Psychiatrists and others who have looked at the status of patients who have experienced myocardial infarction or coronary artery bypass surgery note a high incidence of depression and anxiety.¹⁷⁻¹⁹ Marked improvements in coronary care over the past decade have made no change in the percentage of deaths from myocardial infarction that occur out of hospital. Certainly these advances do not affect the large group of patients who die before reaching the hospital. To change the mortality of this group, focusing on denial assumes greatest importance.

Currently, the time it takes for patients with myocardial infarction to come to the hospital averages three to six

hours.^{20,21} Fear of hospitals has been noted as a cause for delay.⁵ Two ways to lessen patients' fear of hospitals would be to emphasize that (1) patients have ultimate control over in-hospital treatment options, and (2) treatment of cardiac disease does not require prolonged separation from family.

A method of approaching the group of people at risk for sudden death would be to screen for denial. Denial as measured by Hackett and Cassem correlated closely to clinicians' judgment, which consistently differentiated major as compared with minimal deniers.¹⁶ Further emphasizing a simple approach to screening for denial, Bar-On asked only a few questions to screen for denial in his series of cases.¹² Questions that focus on personal relevance, vulnerability, or responsibility, such as "Why are you here?" "How serious are your present problems?" and "What will help you cope with this?" give the patient an opportunity to deny the importance of a life-threatening illness or to acknowledge a reasonable level of concern. Since physicians have shown good insight as to which patients either minimize or maximize the importance of their symptoms, the response that patients give to these questions would generally classify them as showing appropriate or inappropriate levels of denial. Quantifying an exact measure may not be necessary.

If during an office visit the physician notes the presence of one or more major risk factors for coronary artery disease, a couple of simple questions to probe for denial could be added to the interview. Should the patient display excessive denial, the physician may alter his approach to become less threatening. Routine office visits should also be scheduled, since the denying patient is more likely to refute the significance of symptoms and may not seek medical help.

Finally, the patient with known heart disease or with multiple cardiac risk factors who displays inappropriate denial should be advised to seek psychological consultation. Mounting clinical evidence reveals that behavioral changes can be made.²² Blumenthal showed that type A behavior in cardiac patients could be altered.²³ More specifically related to denial was the work of McKendry and Logan.¹ They classified patients hospitalized for myocardial infarction into three groups and instituted different management techniques for each group. Psychologists have also reported success in changing denial patterns in individual case reports.²⁴ While still at a preliminary stage, these clinical studies suggest that psychological intervention in high-risk behavior patterns may alter the undesirable behavior.

SUMMARY

The goal of screening for denial is to institute preventive care. Appropriate strategies, such as the development of

nonthreatening educational approaches to cardiac disease and the reduction of anxiety toward hospitals, will encourage patients to seek medical care more rapidly. The identification of patients with strong levels of denial and elevated cardiac risk factors allows the physician to track these individuals and to encourage them toward ongoing health maintenance. Equally important are educational programs to increase physician awareness of the beneficial and harmful effects of denial. Increasing the knowledge of physicians and patients about the role of denial perhaps would allow physicians to redirect their emphasis toward reducing two thirds of the deaths attributed to myocardial infarction that ultimately occur out of the hospital. This group—those who die at home—is unlikely to be helped by technology. Thus, further reduction of overall cardiovascular mortality depends on dealing with the psychological factors, such as denial, that influence pre-hospital death.

Acknowledgment

The author acknowledges support from the Moses H. Cone Hospital and the Greensboro Area Health Education Center, Greensboro, North Carolina, and the Department of Family Medicine, School of Medicine, University of North Carolina at Chapel Hill.

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