Psychosocial Aspects of Sudden Death

A Preliminary Report

William A. Greene, MD; Sidney Goldstein, MD; and Arthur J. Moss, MD, Rochester, NY

Meaningful information was available on 26 patients who died suddenly in a 44,000 industrial population. The data, past illnesses, prodromal symptoms, and psychosocial information were obtained from the plant medical records, the private physicians, and mainly from direct interviews with the surviving next-of-kin, usually the wife. The data suggest that the majority of these patients, all men, had been depressed for a week up to several months. The sudden death then occurred in a setting of acute arousal engendered by increased work and activity or circumstances precipitating reactions of anxiety or anger. The findings suggest that the combination of depressive and arousal psychological states or abrupt transition from one such state to another may produce disharmonious responses in the hormonal and autonomic nervous systems, as well as central nervous system mediated behavior, which are conducive to the sudden death.

The focus of my presentation is psychological variables in relation to sudden death. The patients whom I describe have already been described in some detail in Goldstein's presentation[1] since the prehospital trio involved in the study of myocardial infarction at a picturesque industrial plant in Rochester, NY, includes Dr. Goldstein, Dr. Moss, and myself. My own main concern has been with psychosocial variables in both the on-work part of the study (those employees reporting to the industrial plant medical facility with symptoms indicating a myocardial infarction) and the so-called off-work part of the study (those reporting to nonplant medical facilities such as personal physicians, hospital emergency, or ambulance call). These two groups comprise all those with symptoms of suspect or actual myocardial infarction who get to the hospital alive. The study of this total industrial population also includes those who die suddenly, within 24 hours of onset of significant development or change of symptoms.

My interest in these psychosocial aspects evolved during a study with Dr. Moss of the adjustment of patients with cardiac pacemakers in the course of which we took note of psychological factors occurring in relation to the onset of symptoms at the time of development of varying degrees of heart block with dizziness or syncope. In many, the symptoms of heart block developed in psychologically distressful situations, chiefly those of depression.[2] A later investigation, undertaken with the cardiologists four years ago, of patients with heart disease, congenital and acquired, subjected to cardiac catheterization, showed differences in behavioral reactions to the threat of the catheterization procedure which could be correlated with variations in cortisol and growth hormone changes.[3] Such behavioral and hormonal differences in turn have recently been shown to be correlated with subsequent morbidity and mortality, especially in relation to cardiac surgery.[4] I have also had a long background of interest in problems pertaining to the psychophysiology of the cardiovascular system, having

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From the departments of medicine and psychiatry, the University of Rochester, School of Medicine and Dentistry; the Strong Memorial Hospital; and the Rochester General Hospital, Rochester, NY.

Reprint requests to University of Rochester Medical Center, 260 Crittenden Blvd, NY 14642 (Dr. Greene).

been trained under George Engel, MD, whose early investigation of the psychophysiologic aspects of fainting are well known.[5,6]

Dr. Engel has recently published papers which describe a series of cases of sudden death which he has gleaned from newspaper reports. From these accounts, he identified a number of types of dramatic life settings in which sudden death may occur. Most involved intense displeasure, as with the loss of a beloved person or conditions of profound anxiety, but a few reflected intense pleasure, as with a happy ending. Common to all was that the events were impossible for the victim to ignore and they responded with overwhelming excitation or giving up or both. He proposed that this combination may provoke neurovegetative responses, reflecting psychologic as well as physiologic uncertainty and involving both ergotrophic and trophotrophic systems which may be conducive to lethal cardiac events, especially in individuals with preexisting cardiac disease.[7,8] Part of my interest in studying in detail the patients in the Eastman Kodak Company population who have sudden deaths has been to determine whether there was any truth to what Dr. Engel has been reading in the papers, or perhaps more correctly, whether there was any appropriateness to the interpretations he was reading into what he was reading in the papers.

Material and Methods

Methods.—First should be mentioned our method of obtaining psychosocial data pertaining to these patients who have died acutely. It has already been pointed out by Dr. Goldstein[1] and will be pointed out further by Dr. Moss[9] that the past illness data, as well as the prodromal pathophysiologic data on these patients, were obtained from the Eastman Kodak Company physicians as well as from the patients' private physicians, either by Dr. Moss or Dr. Goldstein. My role in the study has been to obtain data on psychological and social changes in juxtaposition to an actual myocardial infarction, episodes of prolonged ischemia from surviving hospitalized patients or from next-of-kin relatives of sudden death patients. Such psychosocial data is sometimes referred to as "soft." It has been my contention in my participation with Dr. Moss and Dr. Goldstein, as well as the other cardiologists at this medical center with whom I have worked, that psychological and social data can be as reliable as are a great deal of the so-called hard data, such as estimates of the severity of a myocardial infarction at the time certain very sophisticated measurements of pathophysiological variables are now being made. One need not be defensive about the softness of psychological data appropriately gathered, and it may be germane to be offensive at times about the fuzziness of many pertinent variables measuring the variations of pathophysiology in patients with a myocardial infarction.

Studies of sudden death have been made by a number of types of data-gathering methods[10-12] and some details of our methods should be described. Reports go to the industrial plant visiting nurses of persons who are out ill with any type of disease, and those with symptoms suggestive of a myocardial infarction are reported to this prehospital investigative group. The nurses also learn within 24 hours any circumstances of sudden death, either in the plant or out of the plant. These are reported to the prehospital study center and to me specifically.

Since the patient has died before the case is brought to our attention, the problem is whom one should approach in reference to the circumstances of the sudden death and questions about prodromal symptoms and emotional state of the patient and the family dynamics in the days, weeks, or months preceding the event. Sometimes one assumes that under such circumstances, as in many situations, it would be better if a woman did the interviewing of the responsible surviving relative (so far always the wife in our series), while at other times it would seem preferable that it be a man who does this. When it is difficult or impossible to make up one's mind about such a matter, it may be desirable to use both approaches. Fortunately, we are in a situation where both a woman, a nurse, and a man, a physician, interview in all cases.

The visiting nurse makes a courtesy call at the funeral home at the time of the funeral of the deceased, making a contact with the widow whom she frequently already knows because nearly all patients had been sick with cardiovascular disease in the past. Along with condolences, the nurse makes arrangements for a repeat call on the widow sometime in the subsequent week, mainly for the purpose of considering such things as insurance and benefits.

Within 24 hours of the sudden death, the prehospital investigation center is notified. Then a contact is made by me with the nurse to ascertain the plans for the funeral arrangements and when she will probably visit the spouse. The nurse later visits the spouse approximately a week after the funeral. Following that visit, I reconnoiter with the nurse, who has gleaned considerable information about the reaction of the spouse, as well as the spouse's description of the circumstances of sudden death, her degree of grief, and in particular, who she is angry at: fate, herself, the company, or not infrequently, the patient.

The nurses are very perceptive and frequently have had considerable association with the particular patient's family because of his previous cardiovascular symptoms related to an earlier infarction, angina, or hypertension. They informally obtain information about the circumstances, particularly the matter of prodromal or lack of prodromal symptomatology, as well as family make-up and conflicts. They also get information which is related to them by the spouse regarding the circumstances of the patient's demise. The nurses indicate that there is a special study being conducted by doctors from Strong Memorial Hospital and the Rochester General Hospital and that Dr. Greene will likely be in contact with them about the circumstances of the patient's final illness.

Initially, we had some qualms about how readily these widows would accept what might be an intrusive inquiry into the circumstances surrounding the death of their husbands. Usually between the 10th and 15th day after the death of the patient, I make a telephone call to the home, having obtained the address and telephone number from the nurses and also having called the deceased's physician and also the wife's physician, where this is different, and obtained their acquiescence. When I call the spouse, I identify myself by name,

as coming from Strong Memorial Hospital, and as NOT having anything to do with the Eastman Kodak Company so that she can feel free to talk about her perception of the patient's possible work stress or dissatisfactions. I explain our general study of patients with actual or suspected heart attacks and particularly our interest in those who have died suddenly. The spouse is then given the opportunity either to refuse or for me to meet with her directly for an interview at her home, in my office, or over the telephone, the preference of all of them so far. Much to our surprise, these spouses have been only too willing to talk about the circumstances leading up to their husbands' deaths. Some of this I am sure is motivated by their current grief and their wish to talk over the situation with someone. I should point out that I have had long experience and toleration in interviewing people in grieving situations and obtaining psychological data. During such data gathering I may be therapeutically supportive, I think, without contaminating appreciably the information obtained. Most of the widows indicate their wish to go over the circumstances of the death of their spouse with the idea that it may be of benefit to someone else. Some of their participation is obviously motivated by their need to express their sadness and, at times, their fury at the plant, at the personal physician, at fate, and, not infrequently, at the patient whom they may describe in various ways as stupid and stubborn at not having gone to a physician sooner. It has been surprising how many of these women indicate, at least after the fact, that they had assumed and felt for days or weeks that the patient was going to have another myocardial infarction and frequently they had predicted the several circumstances in which this might occur.

We had assumed that the emotional distress of the relative would be a problem in conducting these interviews. The interviews are semi-structured and include essentially the same information that is obtained in interviews of patients who develop actual or suspected infarctions, turn in on-work or off-work, and are interviewed directly in the hospital. Rather than being reluctant, the spouse has usually been very willing to talk and the problem has been one of terminating the interview after an hour or more. The extent to which these widows are able to talk, at times with considerable distress, but with reasonable coping resources has been quite touching. Particularly this seems so since they talk to someone that they do not know over the telephone. It may be that this mode of interview data gathering has certain advantages, as well as some disadvantages and may engender positive or negative contaminating influences on the validity of the information obtained.

Subjects.—The particular patients about whom I am reporting today include the 22 sudden deaths that Dr. Goldstein[1] has already referred to, and an additional four patients. Two of these were deaths on-work prior to our beginning the total work study in June of 1970 and were sudden deaths on-work during 1969 after the on-work phase began in December 1968. Another additional patient was in the on-work study when he developed a severe myocardial infarction and survived but then died suddenly by carbon monoxide suicide three months later. He is included mainly to highlight the occurrence of actual suicide among persons who have the disability often associated with myocardial infarction. The fourth patient, in addition to those covered by Dr. Goldstein, was a retired employee who died at the plant and is considered because he died in a situation of apparent success and elation as will be described more in detail later.

The next-of-kin interviewed regarding these sudden death patients has been the widow except in four circumstances: once where it was the father, another in which it was the sibling, and in two circumstances in which it was an extramarital girlfriend.

Preliminary Findings

Past Illnesses—A history of the patient's past health is obtained after the spouse is asked to give an account of the acute prodromal symptoms and the social circumstances leading up to the patient's death. In all, except three patients, there was evidence that there were some prodromal symptoms and this may have been 100% if one includes increasing patient fatigue, quite evident to the spouse. In nearly all of these sudden death patients, as indicated by Dr. Goldstein, there had been a history of previous myocardial infarction or known cardiovascular disease making them high-risk patients.

We have also been particularly interested in eliciting information about the incidence of past peptic ulcer, hiatus hernia, gallbladder disease, or evidence of vasodepressor syncope. One of our hypotheses has been that these categories of past illness might predict those in the population who are vagal reactors and therefore might be candidates for arrhythmias and sudden death. These 26 sudden death patients are not a large enough number to make meaningful comparisons with the group of patients reaching the hospital alive and surviving 24 hours after infarction. None of the patients with sudden death, at least according to the private physician or the spouse, had ever had any episodes of what were interpreted by us as vasodepressor syncope. However, at least a third of them had had well-documented peptic ulcer, gallbladder disease, or hiatus hernia.

We are also gathering from the next-of-kin, as we do with the patients who reach the hospital alive, the incidence of vascular disease, particularly myocardial infarction, angina, cerebrovascular ("stroke") episodes, and peripheral vascular insufficiency in the parents and siblings, regardless of whether the relatives are still alive or dead and the age at death where this has occurred. This pertains to one of our hypotheses that there may be an inverse relationship between the presence of a familial or constitutional factor and the occurrence of prodromal psychological precipitating factors. This has been indicated in certain other diseases, particularly rheumatoid arthritis.

Psychosocial Data.—The spouses are asked to give their perceptions of the patient's psychological state on the day of the sudden death and in the 3- to 18-month prodromal period. As mentioned before, it has been of particular interest how frequently the spouse has been afraid that a recurrence of a myocardial infarction or of

a catastrophic illness including death was going to occur and the inability that she has had in getting the patient to seek medical help. She usually based this assumption on her awareness of his tension due to increased pressure at work, actual longer hours at work,[13] and on family or other socially precipitated emotional distress for the patient. Even so, approximately half of these patients had seen a physician, generally for a scheduled routine check-up or for symptoms of epigastric or chest discomfort or increase in anginal symptoms, within the preceding ten days.

For all of the patients, the interview included the family make-up, whether the patient had changed his place of residence recently, whether the wife is aware of any recent work change, and in particular, whether there has been any change in the status of the household: parents dying, moving into another home, and in particular, family social transitions which have been a focus of interest to the group at Rochester for some time. This includes the health of the spouse, whether or not there are offspring, and whether the children have moved out of the home recently. In particular, among these men who develop myocardial infarction, we have found considerable psychological distress evoked by circumstances in which there were departures or current disappointing conflicts between the patient and a son or daughter, especially a son.

Circumstances of departure of a child from the home or disappointment of parental expectations appear to be the most commonly reported acute precipitating factor in the patients who reached the hospital, as well as in those with sudden death as reported by the spouse. It may be that this is a commonplace dilemma and occurrence among 50- to 60-year-old men with their offspring in the culture of our times. There is some evidence that this may be a problem peculiar to an industrial plant population where there has been for years considerable conflict between employee-patients who have worked over the years without going to college and other employees who have been to college, where both have the same job classification, for instance as an engineer. It appears to have been particularly important for the one who went to college to have his son emulate him by going to college and for the man who only went to high school or less that his son become one of the college men as he would like to have been in the cultural hierarchy of the plant.

The spouse is asked directly whether there have been any current conflicts between herself and the patient. Generally, I think, the spouses have been reasonably open and accurate in their statements about these matters, including the adequacy or inadequacy of sexual relationships. Sexual incompatability or impotence has been surprisingly infrequent in these men who are often depressed, at least as far as the data we have obtained is concerned, and has not so far been reported as a source of conflict or as the activity occurring at the time of the patient's final acute illness with sudden death.

Of particular interest to us has been whether the week or the day of the patient's sudden death has any particular significance as far as the patient or the family is concerned. Was this an anniversary of the death of any parent, of a marriage, of a birth, or any significant event in the life of the patient or the family as a group such as the age or date of death of the parents? I described the emotional significance of such anniversaries, conscious or unconscious, as determinants of distressing affective reaction of patients developing relapses in leukemias and lymphomas several years ago.[14] Anniversary reaction as used here is not the same phenomena described originally by Hilgard pertaining to a parent's reaction to a distressing event in his own life as a child when his child in turn reaches the same age.[15] Such age-related reactions between parent and child I term "generation reactions" rather than "anniversary reactions." These factors have been stressed particularly by Fischer and Dlin[16,17] in their studies of patients with myocardial infarctions as "emotionally invested deadlines" and have also been noted by Wolf[18] in his appreciation of the significance of anniversary reactions. These are the main areas that we cover in the interview and there are other details which I will not go into at the present time.

Age and Socioeconomic Status.—In my presentation, I am going to hazard committing two taboos. One is not to present any tables or figures and the other is to be somewhat anecdotal about four of the 26 patients to whom I am making reference in this presentation. But I have to give some figures. The mean age of the 25 patients dying suddenly, most likely from myocardial infarction or arrhythmia, or both, (I am not counting the man who committed suicide) was 55.6 years with a median of 56.5 years. Mean age of the patients who reported into the medical facilities on work with suspect or actual myocardial infarction was also 55.7 and a median of 57 years. Those who reported off work, to their own physician or directly to a hospital, were somewhat younger: mean age, 52 years, with a median of 54 years, and they had worked at the plant a somewhat shorter period of time. Combined on-work and off-work age groups showed a mean age of 54 years, so there is no significant difference in age of the sudden death patients compared to the total group of suspect or actual myocardial infarcts. There is also no difference in socioeconomic status between the sudden death patients and those who reached the hospital alive, at least within this industrial population which is probably not representative, being of somewhat higher

socioeconomic rank as compared to the total population of Rochester. During the period of the occurrence of the 22 sudden deaths, out of a total of 200 suspect or actual infarctions, there were also six suicides, all among men, with a mean age of 46 years (median, 50.5 years). So the deaths by suicide occurred in men nearly a decade younger than the members of the population dying suddenly or those hospitalized with myocardial infarctions.

Representative Patient Summaries.—Psychological factors seemed to play a precipitating factor in the time of development of the event in four categories of sudden death circumstances. It should be pointed out that among 40% to 50% of these patients no evidence was obtained that acute psychological factors were of significance in the time of the patient's death, although such factors may have been a factor in the patient's tardiness in getting to medical help. From the data available, via the sources available, at least 80% of these 26 patients had symptoms which could be construed as depression. They were and had been "running sad."

One 55-year-old man had worked for many years at the plant and had always been quite disorganized and irresponsible in reference to his family as well as his work. Over the course of the summer months, he began putting everything in order both at home and at work. At least in retrospect, his wife felt he knew something was going to happen to him and he wanted to have things in order, including insurance policies, his accounts at home, and his correspondence at work. According to his wife, he had been depressed due to conflicts with his son because the 18-year-old boy had been in court for stealing and had had to serve out his time in jail on weekends for several months. In addition, there was a severe disappointment for both the patient and his wife who had saved for this oldest son to go to college. However, the son had actually had to repeat two years in grammar school, again failed, and was having to repeat another year of high school. On the day after the son was again caught stealing and held for petit larceny, the patient had a massive myocardial infarction at work and died in spite of attempts at resuscitation at the plant.

Representative of the circumstance of a number of patients was the departure of the last or only child in the family for college or marriage, in response to which the patient had been depressed. However, according to his wife, he had not been able to express these feelings and compensated by overextending himself by working harder at home or at the plant or shoveling snow vigorously and developed a sudden cardiovascular collapse.

A unique tale is that of a 50-year-old man who for a year had multiple abscesses of his right breast, not the left, which had required incision and drainage over a period of some eight months, keeping him off from work an appreciable amount of time. He finally agreed to go to the hospital and had a mastectomy in August. He had no previous history of cardiovascular disease, but the evening after his surgery and recovery from anesthesia he developed a myocardial infarction. Following this he did quite well in recovering from his infarction in the hospital and at home. According to his wife, however, he was increasingly depressed and particularly upset that he was not able to be active and return to work. In late October, he had become "not angry," she said, but just "feeling he couldn't do anything about it" when a group of local youngsters blew up a fire cracker damaging their mailbox on the night of Halloween. Three days later his wife persuaded him to take their first stroll in his convalescence into the garden of their home hoping to cheer him up a little. They walked into the back garden and noted for the first time that an arborway, which he had built early that summer and of which he was very proud, had been sprayed with tar paint. The patient apparently just looked at this while his wife expressed her anger. At this, the patient said he did not feel well and wanted to return to the house. He got 20 yards, as far as the kitchen side door, and collapsed. As he did so she asked him whether he was having any pain to which he replied, "No." He died within five minutes. The wife added the fact that she was so relieved that they had not gone further out into the back yard where they had a new trailer which had also been tar spray-painted as a Halloween prank.

It happened on this occasion, since it was unusual for a man to have a mastectomy, that I asked whether having a mastectomy was of any particular significance to this man. To this his wife replied, "It's strange you should ask that question." She then gave an account that her sister had died two years before on Nov 12 with a carcinoma of the breast after a mastectomy. This man's death actually occurred on Nov 6. His wife then indicated that on Nov 3, one year before, the patient's sister, who had had a carcinoma of the breast and a mastectomy, had died. Also on Nov 12, one year ago, his older and favorite brother had dropped dead of a myocardial infarction.

An additional example is a retired 66-year-old employee who is not in the employee total group, but who is included because of the circumstances of his death and because he happened to be in the company plant at the time of his sudden death. This occurred when he was playing in a billiard tournament in the retirees recreation facility in which he had become very much involved as one of the compensations for his retirement the year before. In the particular league match in which he was playing, he was up against a partner with whom he was especially competitive. This patient also had been depressed since his wife had recently come home

from the hospital having suffered a myocardial infarction and his only child, a 40-year-old daughter, had been sick and was in the hospital for evaluation of multiple congenital, including cardiac, anomalies. The course of this match which went evenly back and forth came down to the last two balls on the table. The patient's opponent had an easy shot and the patient said to him "Well, I guess that's it." Whereupon the opponent took his shot and missed. This left the patient an equally easy shot which he made. He stood up, manifesting his relief and pleasure, and then collapsed on the billiard table and could not be resuscitated. To the knowledge of friends who had been with him for the previous two hours, he had been having no symptoms and had been playing well and accurately without discomfort.

Comments

From this preliminary report, our data suggest that in at least 50% of the patients with sudden death, psychological and social factors are associated with the time of sudden death. It is likely that the frequency of this association might be higher if more specific subjective information were available from the deceased, which is of course impossible. The psychological setting is multifactorial, usually a setting in which the patient has been depressed and expressed this according to another person's observation and a sudden reaction precipitating arousal, such as increased work, anxiety, or anger occurs.

It appears to me that there is some wisdom in the lore which Engel has read into the reports in the newspapers.[8] The data suggest that a combination of depressive and arousal affects may together be conducive in engendering sudden death. Perhaps these combinations of affect states and their physiologic concomitants produce a disharmonious variety of reactions implemented by autonomic and hormonal reactions and central nervous system-mediated behavior. Most attractive is the hypothesis that sudden death occurs in a basically depressed man with high physiological coronary disease risk who for some reason experiences high arousal. On return to his baseline ongoing depressive state after arousal, there may be a decrement in pulse rate and blood pressure in relationship to which there may develop arrhythmia or infarction, or *both*. The report by Hinkle of relative bradycardia and disordered conduction as predictors of sudden death in his population would support this conjecture.[19]

I see no reason to assume from the data we have so far on this group of 26 sudden deaths plus superficially screened data we have on an additional 20 patients that any type of telephone heart attack service or mobile coronary care ambulance would have made any difference. It has been my interpretation that the patients I have seen, both those reaching the hospital as well as the sudden death patients, would have been reluctant to turn to someone for assistance even when appreciating the likelihood that they are having a heart attack of significance. They repress this perception and rationalize its significance rather than face the prospect of the helplessness of being sick. This I expressed at the first Prehospital Conference in 1969, in contrast to Hackett's assumption of the patient's use of denial to defend against the anxiety of the threat of death.[20] It has seemed to me, as I stated at the 1969 Prehospital Conference, that some type of buddy system should be worked out for the high-risk patient. The buddy would most logically be his spouse, a sibling, a friend at home, or a fellow worker. Both patient and buddy should be instructed by the physician with a definite, nonalarming statement that the patient is liable to have a subsequent myocardial infarction and that the patient should turn to the person who has been designated as his buddy. They should both be told what to do if the physician is not immediately available, such as to go to the nearest hospital emergency room or call the local ambulance. This proposal is related to the fact that I think the main problem in the long delay period of patients with myocardial infarction has little to do with anxiety about a heart attack per se or anxiety about dying, so-called denial. The patient is more concerned with a reluctance to admit being helpless or sick and he can only turn to somebody with whom he has previously lived or worked and feels it is permissible to be helpless. Even so, I doubt that this type of preparation would have made an appreciable difference in more than six of these 26 patients with acute sudden death.

It is also likely that the most reliable opportunity for gathering data on the relevance of psychosocial circumstances surrounding sudden death in patients will accrue from a study of patients who do die suddenly but do not actually die, that is to say patients who have potentially lethal arrhythmias and are resuscitated. From such patients one can get prodromal data, including patients' actual behavior, thoughts, and affects prior to the event requiring resuscitation. This approach may present a problem because a few of these patients are amnesic for the immediate prodromal period, but this is not so in most cases. Robert Klein, MD, Dr. Moss, and I are currently getting such information from these patients as they become available in the emergency department and on the coronary care units. Most focus of studies on such patients has instead been on the psychological *effects* of arrest and resuscitation.

In this connection it is germane to mention one patient of Dr. Moss's in which the circumstances precipitating a ventricular tachycardia were certainly closely associated with psychologically distressful occurrences of considerable idiosyncratic emotional significance to this man. He was in-

terviewed by me since he worked at the company and was admitted as a patient of Dr. Moss with a recent obvious myocardial infarction. He requested Dr. Moss as his physician since he had taken such thoughtful and effective care of the patient's wife four years before when she was terminally ill with a cardiomyopathy associated with disseminated carcinoma of the breast. The patient who had no previous significant cardiovascular illness had not seen Dr. Moss, nor had he been in Strong Memorial Hospital since the death of his wife.

While being cared for acutely in the emergency department and without discomfort with his infarction, he was approached about being a research patient on the Inhospital Myocardial Infarction Research Unit (MIRU) study, the investigative purpose of which was explained to him. He agreed since he felt his role as research subject might be beneficial to someone else. He was therefore asked to sign the customary consent form. As he was about to sign, it occurred to him that he might be too weak and not attentive enough in his state of illness to sign his name correctly. This immediately reminded him of the evening four years before when his dying wife had to sign a legal document the night before she died and bemoaned the fact that she was not sure she had the strength or was enough in her right mind to sign her name properly. The patient did sign his name appropriately but was aware of acute grief feelings touched off by this association of his own situation and that of his wife. He was then taken to the third floor of the hospital, the floor he recalled where his wife had been, and he was prepared for the usual MIRU investigative procedures. Still thinking of his wife, he was aware of increased anxiety about what procedures he was going to have to undergo even though he had complete confidence in Dr. Moss and the MIRU staff. Before any manipulative procedure such as venipunctures or catheterizations were initiated, he developed acute ventricular tachycardia and severe hypotension requiring resuscitation. This recurred three times in the next 15 minutes until the patient was stabilized with lidocaine hydrochloride therapy.

This is an instance of an acute arrhythmia which could likely have heralded sudden death and was perhaps precipitated by the patient's idiosyncratic circumstances in association with his wife's death which engendered, quite privately, feelings of intense grief as well as anxiety. Such types of data were available because the patient himself could be interviewed after the event.

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