

ONCOLOGY. Vol. 11 No. 8

Imagery and Hypnosis in the Treatment of Cancer Patients

By

David Spiegel, MD, and Rhonda Moore, PhD

Department of Psychiatry and Behavioral Sciences, Stanford University School of Medicine, Stanford, California

| August 1, 1997

Many patients with cancer often seek some means of connecting their mental activity with the unwelcome events occurring in their bodies, via techniques such as imagery and hypnosis. Hypnosis has been shown to be an effective method for controlling cancer pain. The techniques most often employed involve physical relaxation coupled with imagery that provides a substitute focus of attention for the painful sensation. Other related imagery techniques, such as guided imagery, involve attention to internally generated mental images without the formal use of hypnosis. The most well-known of these techniques involves the use of "positive mental images" of a strong army of white blood cells killing cancer cells. Despite claims to the contrary, no reliable evidence has shown that this technique affects disease progression or survival. Studies evaluating more broadly defined forms psychosocial support have come to conflicting conclusions about whether or not these interventions affect survival of cancer patients. However, 10-year follow-up of a randomized trial involving 86 women with cancer showed that a year of weekly "supportive/expressive" group therapy significantly increased survival duration and time from recurrence to death. This intervention encourages patients to express and deal with strong emotions and also focuses on clarifying doctor-patient communication. Numerous other studies suggest that suppression of negative affect, excessive conformity, severe stress, and lack of social support predict a poorer medical outcome from cancer. Thus, further investigation into the interaction between body and mind in coping with cancer is warranted. [ONCOLOGY 11(8):1179-1195, 1997]

Introduction

Our customary medical approach to the mental and physical aspects of cancer and its progression has separated one from the other. We have failed to adequately address possible interactions between mind and body, except to see mental events as an afterthought. Yet, those ill with cancer often seek some means of connecting their mental activity with the unwelcome events occurring in their bodies, via techniques such as imagery and hypnosis.

Some "alternative" therapists have put forward the extreme and unproven view that mental events directly cause physical change. Thus, "imaging" a white blood cell killing a cancer cell is supposed to result in a comparable physical event. Many patients have been exhorted to practice imaging their immune system attacking cancer cells like PacMen gobbling up the "enemy." [1]

Despite the absence of any evidence that such exercises affect the course of cancer, these techniques are popular. Indeed, Americans spend more out-of-pocket dollars on alternative health care than on hospitalizations, some \$13.7 billion dollars annually. [2] Furthermore, since 72% of patients do not tell their doctors that they are seeking alternative treatments, it behooves physicians to become familiar with the unconventional treatments that their patients are seeking.

Despite the apparent similarity among many seemingly related alternative techniques, their effects can vary. Hypnosis, for example, which has [long been utilized in medical settings](#) for the control of pain and anxiety, can be quite effective in improving patients' comfort and sense of control over their illness. It is as mistaken to dismiss all psychological techniques as being ineffective in helping patients adjust to their cancer as it is to claim that imaging can cure cancer.

Why Do Patients Seek Alternative Treatments?

Estimates of the prevalence of psychiatric disorders among newly diagnosed cancer patients has ranged from 30% to 44%. [3,4] As many as 80% of breast cancer patients report significant distress during initial treatment. [5,6] Although psychological distress tends to diminish over time, [7-11] as many as one-fifth of cancer patients remain psychiatrically distressed 6 months after initial therapy, [12] 20% to 45% exhibit emotional morbidity 1 to 2 years afterward, [9,13-15] and 10% have severe maladjustment as long as 6 years afterward. [15]

Thus, many cancer patients suffer from considerable anxiety and depression. Even those without such psychiatric symptoms struggle with the existential questions raised by the disease: fears of recurrence and death, pain, and treatment side effects.

Need to Exert Control Over the Illness

Many patients turn to imagery techniques to enhance their sense of control over an illness that makes them feel helpless. An internal sense of control over cancer can be thought of as a two-edged sword. On the one hand, in general, people associate mastery and positive coping with an inner sense of control. On the other hand, when confronted with a progressive and possibly fatal illness, a sense of inner control can be damaging by inducing self-blame for events over which one is, in fact, helpless.

Watson et al [16] distinguish control over the cause of an illness from control over its course. Utilizing a measure called the Cancer Locus of Control Scale, they found that high internal control over the *course* of the illness was associated with a "fighting spirit" with regard to the cancer. Earlier studies by this group and others have found that this attitude is associated with longer survival. In contrast, high internal control over the *cause* of the illness was found to be associated with anxious preoccupation about cancer. Thus, imagery techniques, while seemingly harmless enough, could have the effect of rendering people needlessly guilty about disease progression viewing it as a personal failure rather than an inevitability.

Nonetheless, cancer patients are placed in the position of needing to reconstitute their relationship to their bodies. The diagnosis of cancer is often experienced as a betrayal: "I used to think of my body like

a dog: come, sit, fetch. Now it won't do what I want it to," said one patient with metastatic breast cancer. Imaging techniques are one way to attempt to regain that lost influence over bodily sensation and function.[17,18]

Hypnosis

Definition

Hypnosis is a natural state of aroused, attentive focal concentration coupled with a relative suspension of peripheral awareness. This intensity of focus allows the hypnotized person to make maximal use of innate abilities to control perception, memory, and somatic function. Since the ability to experience hypnosis is a normal and widely distributed trait, and since entry into hypnotic states occurs spontaneously, hypnotic phenomena occur frequently. The alteration of consciousness that hypnotized individuals experience has a variety of therapeutic applications.

Hypnotic experience involves three main factors: absorption, dissociation, and suggestibility. Absorption is an immersion in a central experience at the expense of contextual orientation.[23-25] When one is intensely involved in a central object of consciousness, one tends to ignore perceptions, thoughts, memories, or motor activities at the periphery. Since hypnotized individuals are intensely absorbed in their trance experience, many routine experiences that would ordinarily be conscious occur out of conscious awareness. As a result, even rather complex emotional states or sensory experiences may be dissociated.

Suggestibility is enhanced in hypnosis. Because of their intense absorption in the trance experience, hypnotized individuals usually accept instructions relatively uncritically. Hypnotized individuals are not deprived of their will, but rather, have suspended the usual conscious editing function that raises the question, "Why?" when an instruction is given.

Hypnotic Analgesia

Pain is the ultimate psychosomatic phenomenon, always representing both tissue injury and the psychological reaction to it. The first formal study of hypnosis in pain occurred more than a century ago in India when a Scottish surgeon named Esdaile[26] reported that hypnosis was 80% effective in producing surgical anesthesia for amputations. He was immediately censured by his colleagues and 10 years later withdrew his findings when a report from Massachusetts General Hospital stated that ether anesthesia was 90% effective. Indeed, one of Boston surgeons strode to the front of the amphitheater and announced, "Gentlemen, this is no humbug!" to distinguish the use of ether from hypnosis.

Nonetheless, it is clear that psychological factors are major variables in the intensity of the pain experience. Ninety years later, also at Massachusetts General Hospital, Beecher[27] demonstrated that the intensity of pain was directly associated with its meaning. To the extent that pain represented a threat and the possibility of future disability, it was more intense than it was among a group of combat soldiers to whom the pain of injury meant that they were likely to get out of combat alive.

Behavioral approaches to pain control emphasize changing patterns of social reinforcement that are contingent on pain-related behavior. Pain is classified as primarily operant, ie, influenced by secondary gain, or respondent, ie, driven by a noxious physical stimulus. Respondent pain may gradually be transformed to operant pain as attention and sympathy reinforce pain behavior.

This process can be reversed by providing positive reinforcement for nonpain behavior. For example, nurses and family members can be trained to pay a great deal of attention to patients when they increase

their activity level or converse about subjects other than their pain. Social contacts involving the pain itself, such as demands for medication, are best kept brief and formal. This approach can be quite helpful in increasing levels of physical activity and diminishing excessive analgesic medication use, especially in patients with chronic pain syndromes.

Hypnotic Techniques Used for Pain Control Hypnosis facilitates alteration of the subjective experience of pain.[28] The techniques most often employed involve physical relaxation coupled with imagery that provides a substitute focus of attention for the painful sensation. Patients can be taught to develop a comfortable floating sensation, and highly hypnotizable individuals may simply imagine receiving an injection of a local anesthetic in the affected area, producing a sense of tingling numbness.

Some patients prefer to move the pain to another part of their body, or to develop a sensation of floating above their own body, creating distance between themselves and the painful sensation. More moderately hypnotizable patients often choose to focus on a change in temperature, either warmth or coolness, imagining that they are floating in a warm bath or a cool mountain stream or immersing a painful hand in a bucket of ice chips. The effectiveness of temperature metaphors may be related to the fact that pain and temperature fibers run together in the lateral spinothalamic tract, separate from other sensory fibers. Less hypnotizable patients may benefit from distraction techniques in which they concentrate hard on sensations in other parts of their body.

General Principles Regardless of the metaphor selected, certain general principles can be employed with all uses of hypnosis for pain control: The first principle involves teaching patients to "filter the hurt out of the pain." They learn to transform the pain experience by acknowledging that even though it may exist, there is a distinction between the signal itself and the discomfort that the signal causes. The hypnotic metaphor helps them transform the signal into one that is less uncomfortable.

Second, patients are taught to expand the perceptual options available to them. Rather than viewing a pain experience from only one of two perspectives either the pain is there or it is not they are able to perceive a third option; namely, that the pain is there but is transformed by the presence of such competing sensations as tingling, numbness, warmth, or coolness.

Third, patients are taught to not fight the pain. Fighting pain only enhances it by focusing attention on it, intensifying related anxiety and depression, and increasing physical tension, which can literally put traction on painful parts of the body and amplify the pain signals generated peripherally.

For example, a world-class competitive swimmer had collapsed in an alley as a result of hemorrhage of an undiagnosed lymphoma in his abdomen. During his chemotherapy, he lay writhing in bed, screaming and demanding increasing amounts of analgesic medication, even though he was on high doses of opiates. He would literally "climb the walls" in pain.

He was found to be moderately hypnotizable, and was taught a self-hypnosis exercise that involved his imagining that he was somewhere else he preferred to be. "I'm a great swimmer, but I've never surfed," he said. "Good, let's go to Hawaii," I suggested. He continued to wince, but with a different tone in his voice. "What happened?" I asked. "I fell off the surfboard," he responded. "This time, do it right," I replied. He did this self-hypnosis exercise regularly, and 48 hours later was off all pain medications, joking with the nurses in the hallway.

For children undergoing painful procedures, the main focus is on imagery rather than relaxation, since they are highly hypnotizable and become easily absorbed in the images. Some children find it helpful to play in an imaginary baseball game, picture themselves going to another room in the house, or watching a favorite TV show. This enables them to restructure their experience and dissociate themselves

psychologically from the pain and fear of the procedure[29-32] It is also helpful to have parents assist and to go through several rehearsals of the procedure so that the children do not encounter anything unfamiliar.

Mechanisms Hypnotic analgesia seems to work via two mechanisms: physical relaxation and attention control.[28,29,33] Patients in pain tend to immobilize the painful area instinctively, and yet this enhanced muscle tension around a painful region often increases the pain. Most patients find that they can enhance their physical repose by focusing on a variety of images that connote physical relaxation, such as a sense of floating.

Second, and probably more important, since hypnosis involves an intensification and narrowing of the focus of attention, it allows individuals to place pain at the periphery of their awareness by replacing it with some competing metaphor or sensation at the center of their attention. Thus, by focusing on a memory of dental anesthesia and spreading that numbness to the affected area, making the area warmer or cooler, substituting a sense of tingling or lightness, or focusing on sensation in some nonpainful part of the body, hypnotized individuals can diminish the attention that they pay to painful stimuli.

There is recent evidence that hypnotic alteration of perception results in altered amplitude of the event-related potentials to somatosensory[34] or visual[35] stimuli. When hypnotized individuals imagine that a stimulus is blocked, their cortical response to those stimuli is reduced. Indeed, recent research indicates specific involvement of the left occipital cortex, a brain region strongly involved in image generation, in this hypnotic effect.[36]

Efficacy Studies Whatever the mechanism, hypnotic analgesia is efficacious. Recent systematic studies have demonstrated that hypnosis provides superior analgesia to a control condition of sympathetic attention alone in children undergoing painful procedures.[30] Furthermore, in a randomized prospective study, a combination of hypnosis and group psychotherapy was shown to result in a 50% reduction in pain among patients with metastatic breast cancer,[37] along with a corresponding reduction in mood disturbance.[38]

Hypnotic analgesia has also been shown to be more potent than either placebo analgesia[39] or acupuncture analgesia,[40] although there is a correlation between hypnotizability and responsiveness to acupuncture.[41] Thus, hypnotic mechanisms of pain control may be mobilized by other treatment techniques, but the explicit use of hypnosis in hypnotizable patients has proved to be a more powerful means of controlling pain.

In a review of studies, Hilgard and Hilgard[29] estimated a 0.5 correlation between hypnotizability and treatment responsiveness for pain control. More recent studies have confirmed the importance of hypnotic capacity in the successful use of this technique for pain control.[42] The ability of hypnotizable individuals to focus their attention and alter their response to perception while at the same time producing a physical state of relaxation gives them an unusual ability to restructure their pain experience and thereby develop a sense of mastery over it. Since the pain experience is both psychological and physical, the technique mobilizes and focuses cognitive experience while producing a sense of physical relaxation. It can be especially helpful in giving patients a sense of mastery. After all, the strain in pain lies mainly in the brain.

Many therapeutic approaches using hypnosis involve changing the patient's perspective of the relationship between his or her psychological and physical state, dissociating mental from physical stress, adopting a stance of protectiveness toward his or her body rather than fighting destructive urges, or learning to see sudden discontinuities in consciousness as understandable and controllable hypnotic phenomena. An alteration in consciousness that has long been associated with a mythology of losing

control can actually be mobilized as a powerful therapeutic tool in enhancing patients' control over their behavior, perceptions, somatic functions, and cognition.[19]

Other Imagery Techniques

Other related imagery techniques involve attention to internally generated mental images without the formal use of hypnosis.

Guided Imagery

Andrew Weil, md,[43] in his widely read book, *Spontaneous Healing*, argues that guided imagery uses a form of hypnosis to induce healing. He states that guided imagery empowers patients by encouraging them to develop their own strategies for managing illness.

Weil's approach, similar to that of Milton Erickson[44], assumes that consciousness is often more of an impediment than a help to a person in managing important information, which would be better handled unconsciously. According to Weil, the problem lies in making unconscious information accessible to waking consciousness and encouraging patients to act on it.[43] He[43] offers some suggestions of how one can use guided imagery therapy. Using a personal example, (his wife's chronic back pain during pregnancy), he describes the process of guided imagery therapy[43]:

Begin by picturing yourself in a familiar place where you are completely secure; describe it. Focus on the small details, try to hear the sounds and smell scents as well as see the place. This should lead to relaxation. Establish a dialogue with your body. In this dialogue speak the words that you "hear" your body use, then return to that familiar place where you feel safe. When you are "safely" back, begin to work on the pain, put your attention on the part of your body which hurts (you may find that it looks black) and then see what it has to say to you. Words may pop into your mind. What are your thoughts? Listen to what your body says to you and note its tone. Ask what it wants you to do to stop the pain. After that ask if it can go away entirely. Ask it to please do so.

Weil concludes that the most common correlation between mind, body, and healing of people with chronic illness is total acceptance of the circumstances of one's life, including the illness.[43]

"Positive Mental Images"

Simonton and colleagues initially popularized the use of imagery of white blood cells killing cancer cells.[45] They encouraged patients to use "positive mental images" of a strong army of white blood cells that overwhelms cancer cells, which are depicted as weak and confused. Patients were exhorted to construct an image of themselves as flushing out dead cancer cells and seeing themselves as healthy and free of cancer.

Simonton et al claimed that their program extended participants' survival by approximately 1 year, when compared to "national norms." They promised that a "matched control population is being developed and preliminary results indicate survival comparable with national norms and less than half the survival time of our patients." However, no such study has been published, and sample bias can easily account for their observations. Those patients well enough, outgoing, curious and motivated enough to travel to their program are not likely to be medically comparable to the average cancer patient, and thus, their differential outcome could easily be explained by self-selection.

Simonton et al make a strong claim: "...The results from our approach to cancer treatment make us confident that the conclusions we have drawn are correct that an active and positive participation can influence the onset of the disease, the outcome of treatment, and the quality of life." However, there is no reliable evidence in their book or subsequent writings to support this claim.

This type of imaging, while seemingly benign, can have the adverse effect of making patients who utilize the technique and whose condition worsens feel guilty for not having "imaged" well enough. If cure is in their mental control, then disease progression is their fault. It is bad enough for patients to have cancer without imposing the added burden of unwarranted guilt.

Psychosocial Intervention and Cancer Progression

There is no evidence that simply visualizing white blood cells killing cancer cells influences the rate of disease progression. However, there have been some systematic studies of the effects of more broadly defined psychosocial support on cancer progression.

Morgenstern et al[46] measured the survival time of 34 breast cancer patients who participated in a program involving weekly unstructured group meetings that included "discussions of patients' problems, meditation, and mental imagery using drawings." These patients were matched with 102 cancer patients who did not participate in this program. This was not a randomized trial, but rather, a matching trial. Although the index patients lived longer than the controls, when the authors controlled for time from initial diagnosis to study entry, the difference disappeared. They concluded that there was no enhancement of survival in the group given psychosocial treatment a conclusion that has recently been confirmed in long-term follow-up of the same sample.[47]

Several other outcome studies show no effect of psychosocial treatment on medical outcome. Linn et al[48] randomized a group of patients with a variety of cancers, including those of the lung and pancreas, to receive individual psychotherapy or routine medical care. Survival time did not differ between the two groups. It may be that since virtually all of the patients died during the follow-up year, their disease was too far advanced to be significantly influenced by psychotherapeutic support.

Similarly, Ilnyckyj et al[49] found no survival advantage for breast cancer patients who were randomly assigned to one of several group psychotherapies, some peer-led. Nor was there any demonstrable psychological benefit. Thus, in this case, the relative inefficacy of the intervention may account for the lack of a medical effect.

In contrast, Richardson et al[50] reported that patients with lymphomas and leukemias who were assigned to routine care survived significantly less long than patients randomly assigned to one of three supportive interventions involving education and home visits. There were also differences in patients' compliance with medical treatment, as measured by [allopurinol](#) (Drug information on allopurinol) intake. The survival differences held even after the authors controlled for these differences in medication compliance.

More recently, however, Fawzy and colleagues described the psychosocial[51] and immunologic[52] results of a randomized trial involving 80 patients with malignant melanoma. Half were assigned to routine care and the other half to a series of 12 structured support group meetings. These weekly meetings were designed to help patients better cope with the illness and its effects on their families.

The intervention group showed significant reductions in mood disturbance on the Profile of Mood States and also used more active coping strategies. In a companion report, the authors observed significant

differences in immune function at 3-month follow-up (but not earlier) in the intervention sample. These studies are important for systematically documenting changes in several in vitro measures of immune function in conjunction with psychosocial outcome in a randomized prospective trial in a homogeneous sample of cancer patients.

"Supportive/Expressive" Group Therapy

Impact on Cancer Survival

Our research team engaged in a 10-year follow-up of 86 women randomized to either a year of weekly psychosocial support groups (N = 50) or routine oncologic care (N = 36).[53] The psychosocial intervention involved improving the quality of life, facing and dealing with fears of dying, improving communication with physicians, reordering life values, and controlling pain. This intervention had previously been shown to result in reduced mood disturbance, fewer phobic preoccupations, and improved coping,[38] as well as reduced pain through training in self-hypnosis.[54] In the current study, survival duration was significantly longer in the intervention group than in the control group (36.6 vs 18.9 months) and time from recurrence to death was also significantly increased.[53] This occurred despite the fact that the group emphasis was on improving the quality but not the quantity of life.

Yet, there is limited evidence in the literature that patients who use psychosocial resources, who are extroverted and/or who are provided with a strongly supportive group experience extend survival time. This support group seems to have enhanced patients' sense of control over their lives rather than the course of the disease, helping them get in touch with and tolerate strong affect, including negative affect, expressing anger directly, and making use of available social supports.

Aspects of the Intervention

We have termed this interventional approach "supportive/expressive" group therapy to underscore the fact that it encourages patients to deal with strong emotions. Cancer patients live with constant terror, and yet their difficulties lie in expressing it. Such feelings are not easily or lightly received by family, friends, and health-care staff, since they create anxiety and strong emotion in the recipient. As a result, patients often withdraw from others and experience an increasing sense of isolation. Such isolation makes these patients feel as if they were already dead, removed from the mainstream of life. Indeed, we often comprehend death in terms of separation from loved ones. The artificially imposed isolation resulting from avoidance of strong emotion thus reinforces death anxiety.

Paradoxically, we observed that when the most serious issues, such as dying and death, were discussed openly, fears were detoxified.[55] Patients came to realize that they feared the process of dying more than death itself. They were able to parse the fear into a series of problems, eg, pain control, participation in medical decision-making, and making the best possible use of remaining time. This gave them a greater sense of being able to do something about the unthinkable, shifting from emotion-focused coping in which they only tolerated their discomfort to more active, problem-focused coping in which they took charge of their lives.

Other salient aspects of our intervention included clarifying doctor-patient communication. Patients feel profoundly dependent upon their doctors, and yet they desire to feel in control of treatments that often make them feel sick and helpless. The group sessions offered an opportunity for clarification of issues and suggested strategies for negotiating a more collaborative arrangement with physicians.

For example, one patient who suffered nightmares that her doctors were "putting something over on her," in the form of a threatening wire being passed over her head, talked of her sense of helplessness.

She never knew from week to week whether or not she would receive chemotherapy and feel sick for the next several days. When she negotiated an agreement with the physicians that she would decide how much chemotherapy she needed and on which week to take it, the nightmares disappeared.

The patients were also taught a self-hypnosis exercise for pain control.[56] At the end of each group session, they entered a state of self-hypnosis and used images that conveyed physical relaxation, such as floating in a lake or in the air, along with specific suggestions to alter pain perception while making the affected body part feel warm, cool, tingling, or light. They were instructed on how to practice this exercise on their own.

Social Support and Cancer Mortality

These observations of improvement in mood, pain, and survival as a result of supportive/expressive group therapy are consistent with epidemiologic evidence that the extent of a social network is associated with age-adjusted mortality.[57] Individuals with little social contact suffer a virtual doubling of age-adjusted mortality compared to those with frequent social contacts a relationship as strong as that between smoking or cholesterol and mortality. It is of interest that, for both men and women, relationships with women seem to be the determinant of health status.

In a follow-up of the Alameda County cohort, Reynolds and Kaplan[58] demonstrated a significant relationship between social isolation and an elevated risk of cancer mortality among women, and between social isolation and reduced cancer survival rates among men. Cancer mortality among the women who were least socially connected was 2.2 times that of those who were the most socially connected. Participation in support groups may alter whatever risk factors link social isolation to cancer mortality.

Possible Mechanisms Any of a number of mechanisms may mediate the effect of social relationships on health. It may simply be that individuals with good social connections manage their lives better in general or receive substantial help in managing their lives from those around them. This may result in better eating and sleeping habits, better exercise, and better access to or utilization of health-care services.

On the other hand, there may be more direct psychobiologic mechanisms by which personality style, coping techniques, and social support influence health. Social support may be conceived of as a buffer against stress and its physiologic effects, potentially allowing the body to cope with the disease more effectively. For example, elevations in serum or plasma cortisol among squirrel monkeys exposed to stressful stimuli are halved when the squirrel monkey has one of its "friends" with it. Moreover, these cortisol elevations do not occur at all when the animal has a group of his friends nearby when the stressful stimulus is presented.[59]

Other possible mechanisms potentially consistent with these effects of psychosocial support on disease progression involve the immune system. Kennedy and colleagues[60] found reductions in the percentages of T-helper lymphocytes and the number and activity of natural killer cells in medical students during examinations, except those with strong psychosocial support. These authors have demonstrated that other major stressors, such as marital disruption and caring for a relative who has Alzheimer's disease, are associated with similar suppression of immune function.

Thus, good psychosocial support may block stress-induced inhibition of immune function. Indeed, stress has been found to be associated with reduced natural killer cell activity among patients with breast cancer, which, in turn, has been shown to be associated with a poor prognosis. That is, node-positive patients had lower levels of natural killer cell activity than node-negative patients.[61]

There are a number of problems with the immune explanation of the effects of psychosocial support on cancer. It is not clear that immune function has much to do with retarding the progression of end-stage cancer. It makes more sense that immune surveillance is critical to the elimination of cancers when they are extremely small and involve just a few cells. When the tumor burden is great, it is not clear that the immune system is capable of eliminating it, especially when patients are given strongly immunosuppressive treatments (eg, chemotherapy and radiation) that selectively attack rapidly proliferating cells and thereby suppress white blood cell counts.

Nonetheless, a recent report indicated that a psychological support group not only reduced mood disturbance in patients with malignant melanoma but also changed immune function measures.[52] Although these changes in vitro immune measures do not necessarily mean that changes in disease progression also occurred, they do suggest that psychosocial support of melanoma patients may have an influence on the functioning of the immune system.

Suppression of emotion may be related to increased autonomic arousal during stress, thereby activating endocrine and immunologic responses.[19,62] Although the evidence in each of the areas examined is imperfect and contains some negative findings, numerous studies suggest that suppression of negative affect, excessive conformity, severe stress, and lack of social support predict a poorer medical outcome from cancer. Conversely, social support, especially that which enhances a patient's sense of control and assertiveness, seems to improve outcome. Possible mechanisms include reductions in neuroendocrine stress responses.[63]

Conclusions

Imagery techniques may provide comfort to some cancer patients but they may also induce needless guilt. They are clearly effective in controlling such symptoms as pain and anxiety and may indirectly mobilize social support and improve patient coping in other ways. There is sufficient evidence of benefit to merit further investigation into the interaction between body and mind in coping with cancer.

Although it is far too soon to adopt a variation of the Cartesian dictum, "I image therefore I am," to this problem, it is time that we recognized the interaction between thinking and physical being. Imagery is no cure for cancer, but the social processes mobilized in providing support to cancer patients, coupled with better internal management of anxiety and pain, may well have a positive effect on both coping and the course of disease.

The Long History of Hypnosis in Medicine

Trance experiences have been described at least as far back as the ancient Greeks, often as vehicles for the treatment of mental or physical illness. In non-Western cultures, trance states tended to be the domain of the healer, who entered a dissociative state as part of the healing ceremony.[19,20] Frequently, however, these ceremonies were public, inviting both patient and observers to enter the trance state as well.

One of the most important aspects of ritual healing in many cultures involves the movement from one state of consciousness to another. Noll[21] has persuasively argued that the ability to experience imagery appears to be a cross-cultural experience, one which embodies some innate capacity of human beings.[21] Kessler's[18] more recent study of heart bypass reaffirms this perspective, arguing that visualization (or imagery) is a process of *deliberately* forming mental pictures of a scene or occurrence.[18] In this sense, imagery may be useful to the medically ill by helping them reconstitute their relationship to a body that has in some way failed them.[43]

Hypnosis was identified as a formal phenomenon of psychotherapeutic interest in the 18th century by Franz Anton Mesmer, who employed it as an alternative treatment for many ills that we would now label as stress-related or psychosomatic. His work is credited with being the first Western conceptualization of psychotherapy,[22] a verbal therapeutic interaction between doctor and patient. Shortly thereafter, in 1784, hypnosis-or animal magnetism, as it was then known-was discredited by a panel of French experts appointed by King Louis XVI, not so much on the basis of its results as on its theories.

The panel, composed of Benjamin Franklin, the chemist Lavoisier, and the infamous Dr. Guillotin, concluded that the phenomenon was due to "nothing but heated imagination," although they acknowledged that suggestion, the influence of one individual upon another, was at the root of social order as well as personal change. Despite this rejection, hypnosis has persisted in one form or another for two centuries as a treatment involving the therapeutic use of this special alteration in consciousness.

In the mid-1950s, the American Medical Association and the American Psychiatric Association officially recognized hypnosis as a legitimate therapeutic tool. Two professional hypnosis societies have emerged, The Society for Clinical and Experimental Hypnosis, which emphasizes research in the field, and the American Society for Clinical Hypnosis; each society publishes a journal. Hypnosis is now taught in many major medical schools, a division of the American Psychological Association is devoted to its study (Division 30), and its use in clinical and investigational areas is growing.

Paul B. Jacobsen, PhD
Christina A. Meyers, PhD, ABPP,

1. Dunnivant S: *Celebrating Life*, pp 207. Dallas, USFI Publication, 1995.
2. Eisenberg DM, Kessler RC, Foster C, et al: Unconventional medicine in the United States: Prevalence, costs, and patterns of use. *N Engl J Med* 328:246-252, 1993.
3. Greer S: Psychological response to cancer and survival. *Psychol Med* 21(1): 43-49, 1991.
4. Morris T, Greer HS, White P: Psychological and social adjustment to mastectomy: A two-year follow-up study. *Cancer* 40(5):2381-2387, 1977.
5. Hughes J: Emotional reactions to the diagnosis and treatment of early breast cancer. *J Psychosom Res* 26(2):277-283, 1982.
6. Vinokur AD, Threatt BA, Vinokur-Kaplan D, et al: The process of recovery from breast cancer for younger and older patients: Changes during the first year. *Cancer* 65(5):1242-1254, 1990.
7. Schottenfeld D, Robbins GF: Quality of survival among patients who have had radical mastectomy. *Cancer* 26(3):650-655 1970.
8. Craig, TJ, Comstock GW, Geiser PB: Epidemiologic comparison of breast cancer patients with early and late onset of malignancy and general population controls. *J Natl Cancer Inst* 53(6):1577-1581, 1974.

9. Irvine D, Brown B, Crooks D, et al: Psychosocial adjustment in women with breast cancer. *Cancer* 67(4):1097-1117, 1991.
10. Tross S, Holland J: Psychological sequelae in cancer survivors, in Holland J, Rowland J (eds) *Psychooncology: Psychological Care of the Patient with Cancer*, pp 101-116. New York, Oxford University Press, 1990.
11. Fobair P, Hoppe RT, Bloom J, et al: Psychosocial problems among survivors of Hodgkin's disease. *J Clin Oncol* 4(5):805-814, 1986.
12. Morris T, Greer S: Psychological characteristics of women electing to attend a breast screening clinic. *Clin Oncol* 8(2):113-119, 1982.
13. Cella DF, Pratt A, Holland JC: Persistent anticipatory nausea, vomiting, and anxiety in cured Hodgkin's disease patients after completion of chemotherapy. *Am J Psychiatry* 143(5):641-643, 1986.
14. Omne-Ponten M, Holmberg L, Burns T, et al: Determinants of the psycho-social outcome after operation for breast cancer: Results of a prospective comparative interview study following mastectomy and breast conservation. *Eur J Cancer* 28A(6-7):1062-1067, 1992.
15. Omne-Ponten M, Holmberg L, Sjoden PO: Psychosocial adjustment among women with breast cancer stages I and II: Six-year follow-up of consecutive patients. *J Clin Oncol* 12(9):1778-1782, 1994.
16. Watson M, Pruyun J, Greer S, et al: Locus of control and adjustment to cancer. *Psychol Rep* 66(1):39-48, 1990.
17. Locke RG, Kelly EF: Preliminary model for the cross-cultural analysis of altered states of consciousness. *Ethos* 13(1):3-55, 1985.
18. Kessler S: *Heart Bypass: How to Prepare Your Emotion and Yourself for a Successful Outcome*, pp 59-81. New York, St. Martin's Press, 1995.
19. Ward C: Thaipusam in Malaysia: A psycho-anthropological analysis of ritual trance, ceremonial possession and self-mortification practices. *Ethos* 12(4):307-334, 1984.
20. Meyerhoff B: *Peyote Hunt: The Sacred Journey of the Huichol Indians*. Ithaca, New York, Cornell University Press, 1974.
21. Noll R: Mental imagery cultivation as a cultural phenomenon: The role of visions in shamanism. *Current Anthropology* 26(4):443-461, 1985.
22. Ellenberger HF, *The Discovery of the Unconscious: The History and Evolution of Dynamic Psychiatry*, New York, Basic Books, 1970
23. Hilgard JR: *Personality and Hypnosis: A Study of Imaginative Involvement*, Chicago, University of Chicago Press, 1970.
24. Tellegen A, Atkinson G: Openness to absorbing and self-altering experiences ("absorption"), a trait related to hypnotic susceptibility. *J Abnorm Psychol* 83(3):268-277, 1974.

25. Tellegen A: Practicing the two disciplines for relaxation and enlightenment: Comment on "Role of the feedback signal in electromyograph biofeedback: The relevance of attention" by Qualls and Sheehan. *J Exp Psychol Gen* 110(2):217-31, 1981.
26. Esdaile J: *Hypnosis in Medicine and Surgery*. New York, Julian Press, 1846, reprinted 1957.
27. Beecher HK: Relationship of significance of wound to pain experiences. *JAMA* 161:1609-1613, 1956.
28. Brose WG, Spiegel D: Neuropsychiatric aspects of pain management, in Yudofsky SC, Hales RE (eds): *The American Psychiatric Press Textbook of Neuropsychiatry*, pp 245-275. Washington, DC, American Psychiatric Press, 1992.
29. Hilgard ER, Hilgard J: *Hypnosis in the Relief of Pain*. Los Altos, William Kauffman, 1975.
30. Zeltzer L, LeBaron S: Hypnosis and nonhypnotic techniques for reduction of pain and anxiety during painful procedures in children and adolescents with cancer. *J Pediatr* 101(6):1032-1035, 1982.
31. Ellis JA, Spanos NP: Cognitive-behavioral interventions for children's distress during bone marrow aspirations and lumbar punctures: A critical review. *J Pain Symptom Manage* 9(2):96-108, 1994.
32. Shaw AJ, Niven N: Theoretical concepts and practical applications of hypnosis in the treatment of children and adolescents with dental fear and anxiety. *Br Dent J* 180(1):11-16, 1996.
33. Spiegel H, Spiegel D: *Trance and Treatment: Clinical Uses of Hypnosis*. New York, Basic Books, 1987.
34. Spiegel D, Bierre P, Rootenberg J: Hypnotic alteration of somatosensory perception. *Am J Psychiatry* 146(6):749-754, 1989.
35. Spiegel D, Cutcomb S, Ren C, et al: Hypnotic hallucination alters evoked potentials. *J Abnorm Psychol* 94(3):249-255, 1985.
36. Jasiukaitis P, Nouriani B, Spiegel D: Left hemisphere superiority for event-related potential effects of hypnotic obstruction. *Neuropsychologia* 34(7):661-669, 1996.
37. Spiegel D, Bloom JR: Pain in metastatic breast cancer. *Cancer* 52(2):341-345, 1983.
38. Spiegel D, Bloom JR, Yalom I: Group support for patients with metastatic cancer: A randomized outcome study. *Arch Gen Psychiatry* 38(5):527-533, 1981.
39. McGlashan TH, Evans FJ, Orne MT: The nature of hypnotic analgesia and placebo response to experimental pain. *Psychosom Med* 31(3):227-246, 1969.
40. Knox VJ, Shum K: Reduction of cold-pressor pain with acupuncture analgesia in high- and low-hypnotic subjects. *J Abnorm Psychol* 86(6):639-643, 1977.
41. Katz RL, Kao CY, Spiegel H, et al: Acupuncture, and hypnosis. *Adv Neurol* 4:819-825, 1974.
42. Levitan AA, Harbaugh TE: Hypnotizability and hypnoanalgesia: hypnotizability of patients using hypnoanalgesia during surgery. *Am J Clin Hypn* 34(4):223-226, 1992.

43. Weil A: *Spontaneous Healing*, pp 93-98, 106-122. New York, Fawcett Columbine, 1995
44. Erickson MH: *Advanced Techniques of Hypnosis and Therapy: Selected Papers of Milton H Erickson, MD*. New York, Grune and Stratton, 1967.
45. Simonton OC, Mathews-Simonton S, Creighton J: *Getting Well Again*. Los Angeles, J. P. Tracher, 1978.
46. Morgenstern H, Gellert GA, Walter SD, et al: The impact of a psychosocial support program on survival with breast cancer: The importance of selection bias in program evaluation. *J Chronic Dis* 37(4):273-282, 1984.
47. Gellert GA, Maxwell RM, Siegel BS: Survival of breast cancer patients receiving adjunctive psychosocial support therapy: A 10-year follow-up study. *J Clin Oncol* 11(1):66-69, 1993.
48. Linn MW, Linn BS, and Harris R: Effects of counseling for late stage cancer. *Cancer* 49:1048-1055, 1982.
49. Ilnyckyj A, Farber J, Cheang M, et al: A randomized controlled trial of psychotherapeutic intervention in cancer patients. *Annals of the Royal College of Physicians and Surgeons of Canada* 27(2):93-96, 1994.
50. Richardson JL, Shelton DR, Krailo M, et al: The effect of compliance with treatment on survival among patients with hematologic malignancies. *J Clin Oncol* 8(2):356-364, 1990.
51. Fawzy FI, Cousins N, Fawzy NW, et al: A structured psychiatric intervention for cancer patients: I. Changes over time in methods of coping and affective disturbance. *Arch Gen Psychiatry* 47(8):720-725, 1990.
52. Fawzy FI, Kemeny ME, Fawzy NW, et al: A structured psychiatric intervention for cancer patients: II. Changes over time in immunological measures. *Arch Gen Psychiatry* 47(8):729-735, 1990.
53. Spiegel D, Bloom JR, Kraemer HC, et al: Effect of psychosocial treatment on survival of patients with metastatic breast cancer. *Lancet* 2(8668):888-891, 1989.
54. Spiegel D, Bloom JR: Group therapy and hypnosis reduce metastatic breast carcinoma pain. *Psychosom Med* 45(4):333-339, 1983.
55. Spiegel D, Glafkides MC: Effects of group confrontation with death and dying. *Int J Group Psychother* 33(4):433-447, 1983.
56. Spiegel D: The use of hypnosis in controlling cancer pain. *CA Cancer J Clin* 35(4):221-231, 1985.
57. House JS, Landis KR, Umberson D: Social relationships and health. *Science* 241(4865):540-545, 1988.
58. Reynolds P, Kaplan GA: Social connections and risk for cancer: Prospective evidence from the Alameda County Study. *Behav Med* 16(3):101-110, 1990.
59. Levine S, Coe C, Wiener SG: Psychoneuroendocrinology of stress: A psychobiological perspective, in Brush FR, Levine S, (eds): *Psychoendocrinology*. New York, Academic Press, 1989.

60. Kennedy S, Kiecolt-Glaser JK, Glaser R: Immunological consequences of acute and chronic stressors: Mediating role of interpersonal relationships. *Br J Med Psychol* 61(pt 1):77-85, 1988.
61. Levy S, Herberman R, Lippman M, et al: Correlation of stress factors with sustained depression of natural killer cell activity and predicted prognosis in patients with breast cancer. *J Clin Oncol* 5(3):348-353 1987.
62. Greer S, Watson M: Towards a psychobiological model of cancer: Psychological considerations. *Soc Sci Med* 20(8):773-777, 1985.
63. Spiegel D: Psychological distress and disease course for women with breast cancer: One answer, many questions. *J Natl Cancer Inst* 88(10):629-631, 1996.