Chronic Nonmalignant Pain and Violent Behavior

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Research suggests that violence has entered the medical setting to a remarkable degree, causing medical professionals to be at the highest risk for becoming the victims of assaults and violent acts. This article reviews general theories of aggression and research on these theories, and uses them to assess risk factors in patients with chronic pain. There are data to suggest that pain may increase the risk of aggressiveness in some patients. However, it may decrease the risk in others paradoxically. The research available underscores the need for evaluating patients with pain for the risk of violent or aggressive behavior; specific recommendations are made in this regard.

Introduction

Research suggests that violence has entered the medical setting to a remarkable degree. Statistics kept by the federal government indicate that 22,400 nonfatal workplace assaults were reported in the United States over the course of 1 year. Of these, patients receiving health care committed 45%. Furthermore, 64% of such incidents leading to time off from work occurred in service industries, a category that included medical and social service settings [1••].

Statistics confirm that workers in health care settings are at an especially high risk for becoming the victims of assaults and violent acts [2–6]. There is evidence that workers in health care settings and social services regularly experience abusive situations [1••,6]. Research has found that up to 25% of physicians in general practice reported that they have been victims of patient aggression [7••,8,9]. In Britain, most physicians who responded to a survey reported experiencing violence within the past 12 months, and further reported being exposed consistently to a variety of abusive situations [10]. Another study broke down the types of abuse that physicians experienced [11]. The results found that 67% of the respondents reported having been verbally threatened, 54% reported being physically intimidated, 41% stated that they had witnessed property being damaged, and 39% reported being physically assaulted.

Despite these high levels, there is some evidence to suggest that the prevalence of assaults in medical settings is underestimated. Specifically, the high incidence of aggressive behavior in the medical setting may lead to an underreporting of violent acts. One study found that people in medical settings were less likely to characterize acts as violent than were those in nonmedical settings [12]. It was concluded that the frequent exposure to aggressive acts may desensitize professionals in medical settings, making them less likely to characterize some acts as violent.

The purpose of this article is to review general theories of violence and aggression and the research that supports the use of these models for patients with pain. A specific model of aggression in patients with pain, along with its implications, also is discussed. Recommendations for the evaluation and treatment of the patient with pain also are offered.

Theories of Aggressiveness and Violence

Modern theories of aggressiveness can be traced back to at least 1929, when Cannon developed his theory of the "fight or flight response" [13]. In recent times, the fear/flight pole of this continuum has been associated closely with psychophysiologic arousal and chronic pain [14]. However, the opposing aggression/fight pole of this continuum often is overlooked. According to Cannon's original theory though, it is apparent that the "fight or flight response" theory also was, in part, a theory of aggression.

Cannon [13] postulated that the fight or flight response could be observed in all animals and that it was closely associated with the instinct for self-preservation. Cannon theorized that when an animal perceived a threat (often in the form of pain), it would react with autonomic arousal that was associated with the emotions of rage or fear, which prepared the animal to become aggressive or to defensively withdraw. Cannon thought that the likelihood of the animal choosing to fight or escape was shaped by a variety of situational variables, which were not clearly spelled out in this theory [13]. However, research since that time has developed the concepts first proposed by Cannon.

Anderson and Bushman [15••] have developed a theory called the general aggression model (GAM), which is

one of the most comprehensive models of aggression. This model indicates the factors that influence aggressive responses, including individual and situational variables. At times, these variables may interact in unexpected ways and exert their influences through a variety of means.

Individual Risk Factors for Aggression

Within the GAM framework, the category of individual risk factors includes characteristics such as traits and genetic predispositions. Traits are enduring predispositions; the one that has been associated most closely with aggression is hostility [16]. However, a more recent discovery is that aggression can be associated with high self-esteem, especially when that self-esteem is narcissistic in nature [17]. Compared with theories that point to low self-esteem as the culprit, aggression may be associated more closely with events that may threaten a person's ability to maintain an inflated sense of self [18].

Although research using the GAM paradigm implicates narcissism as a contributor to aggression, other forms of psychopathology have not been explored within the context of this model. However, other studies have found a number of other psychiatric diagnoses to be associated with aggression. Not surprisingly, antisocial characteristics have been found to be associated with violence [19], as have borderline personality traits [20,21••]. Depression also has been found to be associated with violence [21••,22–24]. Fishbain *et al.* [7••] reviewed research that suggests relationships between violence and a wide variety of psychiatric diagnoses, including obsessive-compulsive disorder, post-traumatic stress disorder, and psychotic disorders such as schizophrenia, mania, or brain injury.

Another factor that may be involved in the risk of aggression is genetics. Research has found that aggression tends to be associated with the functioning of the serotonergic system; the functioning of this system is, at least partly, inheritable [25,26]. Consequently, there also may be an inherited component to aggression. However, stress affects the serotonergic system, which makes it more difficult to draw a definitive conclusion.

If the GAM paradigm is applied to patients with pain, it is apparent that they would have a number of risk factors present that would elevate the risk of aggressive behavior. With regard to patients with pain, some of the principle internal risk factors noted by the GAM paradigm involve the presence of psychiatric conditions related to mood. Research suggests that such conditions are common in these patients. One study found that a national sample of injured patients with pain was observed to have a level of hostility that was significantly higher than that observed in a national sample of patients without pain [21••]. In another study, 96 patients with chronic pain were evaluated to assess their levels of pain, anger, distress, and disability. The results showed that 70% had feelings of anger, 74% were angry with themselves, and 62% were angry with health care professionals [27].

Another study found that of 1595 injured patients, 64% had one or more diagnosable psychiatric disorders, compared with 15% in the general population [28]. Many of the conditions identified by this study, such as depression, anxiety, and substance abuse, also are risk factors that have been identified by the GAM paradigm and related literature to increase the risk for violent behavior. Similarly, another study of injured patient populations found a 51% incidence of personality disorders [29]. These conditions also have been linked to an increased risk for aggressiveness. Thus, there is a substantial body of research suggesting that patients with chronic pain are prone to exhibit elevated levels of individual risk factors known to be associated with aggression.

Situational Risk Factors for Aggression

Situational variables are those that involve aspects of the patient's physical environment and social circumstances. Situational variables that engender frustration, provoke the patient, remind the patient of aggressive options, cause pain or discomfort, or decrease inhibitions are identified in the GAM paradigm as factors that can increase the risk of aggression [15••].

The GAM paradigm states that frustration occurs when a patient is prevented from obtaining a goal. According to this model, frustration tends to increase the incidence of aggressive behavior toward the frustrating person [30]. However, other research suggests that aggression often is displaced and vented on people who were not responsible for the frustrating events [31,32]. Research also suggests that frustration is magnified when the frustration is perceived as being particularly unreasonable in nature [33], and thus may have more power to provoke an aggressive response.

For the medical patient, frustration tends to involve the prevented effort to achieve the desired state of wellness, and may be associated with tensions between the patient and physician. In a study of patients who report violent ideation, the measure that was associated most strongly with violent ideation was an elevated score on the Battery for Health Improvement (BHI) Doctor Dissatisfaction Scale [21••]. This scale is composed of items that assess patient perceptions of physician incompetence and lack of empathy. However, because of the correlational nature of this study, it was unclear if physician errors or insensitivity tended to precipitate violent ideation, or if patients prone to violent ideation were more likely to perceive their physicians to be incompetent and unempathic.

The GAM paradigm also predicts that aggressive cues in the environment will increase the risk of aggressive behavior. For example, one study found that observing pictures of guns increased the frequency of aggressive cognitions in

research subjects [34]. This relationship has been supported by a meta-analytic review [35].

Substance abuse is another situational factor that has been linked with aggressive and violent behavior [19,36–38]. In one study, 32% of the patients who entered a substance abuse treatment program had an aggressive incident within 90 days prior to their admission [39]. The risks of violent reactions in the previously mentioned realms of personality disorder and schizophrenia are increased considerably when substance abuse is involved [40,41]. A history of antisocial behavior and substance abuse was found to be related significantly to conflict and aggression in the work place [42]. Substance abuse has been associated with emotional dysfunction [43], which contributes to pathologic reactions to stress and threats, including aggression according to the GAM paradigm.

The GAM paradigm model also classifies a number of other risk factors for violence under the heading of "situational factors." These variables include pain [21••,44] or physical discomfort, which may result from a high ambient temperature [45].

Factors operating in the social context of a patient's condition also have been found to contribute significantly to the risk factors involved in pain and injury. In a review of the literature conducted by the National Institute for Occupational Safety and Health [46], it was determined that there is mounting evidence that psychosocial factors play a role in the development of work-related musculoskeletal disorders. For example, job satisfaction has been found to play a significant role in the report of injury [47].

Patients reporting drug or alcohol abuse also were found to be more likely to sustain an injury [48] that was violent in nature [49]. One study found that up to 50% of all traumatic brain injury hospitalizations were associated with alcohol intoxication; up to two-thirds may have been associated with a history of substance abuse [50]. Studies also have found that the risk of injury was increased by depression, anxiety disorders, and substance abuse [48].

The Fishbain Model

Although the GAM paradigm applies to aggressive behavior in general, Fishbain *et al.* [7••] outlined a psychosocial model of risk factors for violence that is specific to patients with chronic pain. This model, referred to as the Fishbain model, states that many of the circumstances regularly experienced by patients with chronic pain may increase the risk of violence in this population.

One area of concern identified in the Fishbain model is potential difficulties in the relationships that develop between patients and their doctors, their lawyers, and their insurance providers. These relationships can influence various aspects of the patient's case and thus impact their sense of control over their situation and treatment. The Fishbain model states that negative interactions in these relationships can place patients with chronic pain in a double bind and increase their risk of developing violent behavior.

In addition to problematic relationships, the Fishbain model identified a number of physical symptom factors associated with the patient's medical condition that have a potential impact on increased risk of violent behavior. These factors included level of pain, medical diagnosis, the impact this diagnosis can have on a settlement, nonorganic physical findings, a perceived level of disability that is out of proportion to the medical impairment, and perception of the inability to work. The Fishbain model maintains that suspicion of substance abuse is a factor to be considered when assessing the risk of violent behavior in patients with chronic pain.

Fight Versus Flight

Research suggests that pain itself tends to activate the fight or flight response [51]. As Cannon noted [13], pain can lead to the flight response. This could be characterized as a passive avoidant type of behavior in which patients seek to withdraw to a safe place where their wounds can be tended to. In contrast, the fight response, which could be better characterized as aggression, is activated by pain on other occasions. Thus, it appears that pain is related to aggression only under certain circumstances. Although Cannon's research did not specify what these circumstances might be, current research offers some suggestions.

Research using the GAM paradigm has found that hostile personality traits combined with pain may increase or decrease aggressive ideation [34]. In this case, the determining factor was found to be the nature of the cues present in the research subject's environment. These cues included pictures of guns, which served to increase the level of aggressive ideation, compared with pastoral scenes, which produced a decrease in such ideation.

One predictor of aggression is the type of any characterological disorder that is present, although several studies have shown that patients with chronic pain have an unusually high incidence of characterological disturbances. However, the type of characterological disturbances found have differed greatly among studies. For example, one study found the primary characterological disturbances of patients with pain to be dependent and passive-aggressive [52]. In contrast, another study in which injured workers were observed found approximately the same frequency of characterological disturbance; however, the most common disorders were determined to be paranoid and borderline disorders [28]. It seems plausible to hypothesize that a patient who is dependent and passive-aggressive may respond in a less aggressive manner to pain than would a patient who is paranoid and borderline.

Another factor that may be involved has to do with the type of pain that is experienced. Some studies have found that pain of deep origin, whether visceral or deep in the muscles, were more likely to trigger depression,

hyporeactivity, and passive coping; acute cutaneous pain triggered the fight or flight response. However, others have concluded that it is the behavioral significance of pain that is most likely to determine the type of response [53].

Using an entirely different approach, one study factor analyzed the Minnesota Multiphasic Personality Inventory (MMPI) results of 240 patients with chronic pain [54]. The results yielded four factors, the third of which was identified as "passivity." This adds additional support to the contention that passivity (or its opposite, aggression) is a defining dimension for patients with pain.

Other situational variables also have been found to be associated with the appearance of violent ideation. This includes being in the workers compensation insurance system, or having a poor relationship with one's physician [21••]. Research also suggests that it usually is situational variables in the form of staff-patient interaction that precipitates a violent episode [55]. Thus, relationship variables and the larger social context in which pain appears also may play a role in determining whether pain leads to aggressive attempts to neutralize threats, or to a passive dependent attempt to seek care.

Conclusions

The research suggests that the relationship between pain and aggression is complex, and moderated by a number of other variables. Nevertheless, research suggests that pain patients are at an increased risk to exhibit aggressive or violent behavior. The GAM paradigm and the Fishbain model also help to explain the reasons behind this [7••,15••].

Research suggests that dysfunctional people are at a higher risk for injury and illness by virtue of their dysfunctional behavior. Second, injury and illness are inherently threatening events, which may trigger self-protective survival mechanisms that include aggression as a means of defense. Third, the process of medical treatment often is frustrating, sometimes unnecessarily so. This confluence of factors present in patients with pain may help explain the increased incidence of violence observed in medical settings.

Even when violent or aggressive behavior does not appear, it seems quite possible to hypothesize that unexpressed feelings of anger or violent ideation may have a negative impact on treatment outcome. Although research has been conducted on the effects of depression and anxiety on outcome, there is relatively little research on anger and hostility in this regard [56]. However, anecdotal evidence suggests that patients who are angry are less likely to recover from pain disorders; the research that is available is consistent with this [57].

Overall, there is strong empirical evidence for the need for the evaluation of anger and aggressiveness in medical patients who are at risk, and for patients with chronic pain in particular. This evaluation should include the evaluation of individual risk factors within the patient and the frustrations developing in the patient's psychosocial environment. If patients who are at risk for violence can be identified, steps could be taken to ameliorate the patient's distress, and to avoid interactions that may heighten any frustrations.

Based on the available research, several recommendations are made. An evaluation for the potential of aggressive behavior should be incorporated into the initial intake interview for pain treatment programs. The interview should incorporate an inquiry into angry or depressive feelings and hostile attitudes. Additionally, it would be important to identify the patient's frustrations and any "flash points" that may provoke a patient. It should be recalled that research suggests that angry thoughts and feelings are often denied, but may appear suddenly on provocation, or when cues in the environment prompt aggressive ideation.

Because angry feelings often are denied, psychological testing often is helpful. In addition to the assessment of anger and hostility, psychological tests may simplify the process of screening for a wide spectrum of psychiatric disorders. Commonly used psychological tests for this population include the MMPI-2 [58], the Millon Clinical Multiaxial Inventory-III [59], the BHI-2 [60], and the Personality Assessment Inventory [61]. With regard to more narrowly focused measures, the State-Trait Anger Expression Inventory [62] also may be of use.

Because research suggests that most patients with chronic pain also suffer from characterological disorders, evaluating the patient for the presence of such disorders is recommended strongly. Although the research on this is limited, the presence of narcissistic, antisocial, borderline, or paranoid personality disorders may tend to increase the risk that the patient will choose the fight response when under stress. In contrast, the presence of dependent, avoidant, or passive-aggressive styles may increase the likelihood of a flight response. Psychological testing often is helpful in identifying such tendencies.

Research also suggests that aggressive cues in the environment tend to increase the level of violent ideation. Thus, pictures of guns or weapons may trigger a chain of associations and increase the level of violent ideation. Consequently, it would be recommended that aggressive cues should be removed from the environment. For example, it would be recommended that magazines devoted to guns or weapons be removed from the waiting room, especially when such magazines have stories discussing the use of weapons in a violent context. Additionally, magazines that feature stories about murder or violence may have a similar effect. Patients in rehabilitation programs should also be instructed to avoid wearing T-shirts or emblems that have violent or offensive themes.

With regard to treatment, psychological interventions are used commonly for patients with chronic pain. However, because of the available information regarding patient violence, some additional recommendations can

be made. In addition to the treatment of depression, which is performed commonly for patients with pain, recommendations for at-risk patients would include psychotherapy for anger and stress management, assertiveness training, problem-solving, and conflict-resolution treatment as needed.

Research suggests that aggression is associated with low serotonin levels. Consequently, treatment with appropriate psychotropic medications should be considered.

Responding to the patient's frustrations is of critical importance. Research suggests that violent ideation is associated strongly with the perception of the physician as unempathic, and violent behavior often is precipitated by staff-patient interactions.

The first priority of managing any risk of aggressiveness is to ensure the safety of all those involved. However, an additional benefit to remember is that even when angry patients do not become aggressive, they may be less compliant, have poor outcomes, and, as a result, may be generally dissatisfied with their care. Thus, if the medical system can more effectively address issues related to anger, patients may be more likely to get better, and physicians may be less likely to suffer harm.

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