

Pain and Evil: From Local Nociception to Misery Following Social Harm

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Mariagrazia D'Ippolito¹
Adriano Purgato²
Maria Gabriella Buzzi^{1,3} 

¹Neurorehabilitation 2, Post-Coma Unit, IRCCS Fondazione Santa Lucia, Rome 00179, Italy; ²National Health System, Azienda USL Roma 2, Rome 00157, Italy; ³Headache Centre, IRCCS Fondazione Santa Lucia, Rome 00179, Italy

Abstract: Experiencing pain, especially when chronic, is an excruciating condition that should be regarded as a syndrome, if not a disease. People suffering from chronic pain tend to develop psychological discomfort mostly due to lack of acceptance, disbelief, blame. The complexity of pain pathophysiology, plus a wide range of negative psychosocial factors, leads to a more complex suffering that deserves attention and multidisciplinary treatments. The possibility that chronic pain may occur following physical aggression, torture, or persecution raises the issue of evil as a major contributor to pain in its worst representation – when individuals or groups are attacked based on racial, social, gender, religious, political, or other grounds. To explore the complex issue of chronic pain following physical or psychological harm, and to underscore the need for a multidisciplinary approach to reduce the burden of chronic pain, we discuss the biological mechanisms underlying pain state. We seek to clarify those factors leading to pain chronification, as well as personal and social attitudes that confound patients with chronic pain. The importance of family and social environment is also investigated, as well as personality traits of chronic pain patients that may further hamper successful treatment. The presence of chronic pain, modulated by, for example, acceptance of being a victim of premeditated physical and social violence, makes the issue more difficult to comprehend.

Keywords: pain, evil, psychological features

Introduction

Pain as a result of either a harmful condition or persistent tissue damage is easily understood as the consequence of pathological change, since it represents an alarm system to protect injured tissue. Persistent or chronic pain definitions are commonly used interchangeably. We suggest that the term persistent pain (PP) be used for pain that accompanies a stable state. In this state, tissue injury may still be present. Chronic pain (CP) refers to pain when the real or threatened tissue injury is no longer present and adaptive responses have ensued. Pre-existing psychopathology is a factor that promotes CP. This review will cross the biological mechanisms underlying pain status to clarify the personal and social attitude that CP patients may develop, to state the need of multidisciplinary approach to reduce the burden of CP in personal and social life, and to highlight the environment that is in most need of support. Interestingly, experiencing pain does not seem to induce peculiar evil-related behaviors. Nevertheless, a patients environment needs to be strictly assessed and monitored to avoid consequences to personal and professional caregivers.

Correspondence: Maria Gabriella Buzzi
Neurorehabilitation 2, Post-Coma Unit,
IRCCS Fondazione Santa Lucia, Via
Ardeatina 306, Rome 00142, Italy
Tel +39 0651501753
Fax +39 0651501752
Email mg.buzzi@hsantalucia.it

What Is Physical Pain: From the Alarm System to the Pain Generating System

According to the International Association for the Study of Pain (IASP), pain is “an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage”.^{1,2} The Central Nervous System (CNS) individuates and interprets a wide range of thermal, mechanical, endogenous, and exogenous chemical stimuli. When particularly intense, they induce acute pain (AP). The pain system is, therefore, an alarm system to alert and protect the injured subject. The protective functions concern the AP, which is a relatively short, time-limited experience that abates when the injury heals or the disease is cured. In the presence of persistent damage, both the central and the peripheral components of pain pathway exhibit an extreme plasticity to produce hypersensitivity. If protection results, the effect is beneficial. Otherwise, the persistence of activated pain pathways may lead to the condition of CP. Genetics, electrophysiology, and pharmacology provide increasing information regarding mechanisms underlying recognition, codification, and modulation of those stimuli which are able to induce nociception and how these may transform into CP.³

IASP defines CP as pain persisting daily over at least 3 months.¹ An exception is represented by headaches for which the criterion to define them as chronic, according to the International Classification of Headache Disorders,⁴ is the presence of pain for more than 15 days/month for at least 3 months. In contrast, there is not a general agreement on the definition of CP, traditionally defined by the length of time that pain persists.⁵ However, a time-based approach ignores many other important features. Recent conceptualizations have introduced a more refined approach. CP is variously described as “pain without apparent biological value,” pain “that has persisted beyond the normal tissue healing time . . . as determined by common medical experience,” and (or) as “a persistent pain that is not amenable, as a rule, to treatments based upon specific remedies”.¹ However, all these refinements do not capture all the varieties of CP, and an acceptable definition is still lacking.⁶ Some conditions, such as rheumatoid arthritis, will likely never heal, and others, such as migraine and other primary headaches (sharing the lack of evident organic causes), remit and chronically recur. Therefore, the simple time-based definition is not satisfactory. As said above, PP and CP definitions are used interchangeably. However, this does not emphasize the distinction between organically based long-lasting pain and chronification of the symptom. In order to better clarify this issue, we

suggest that PP should be used when the injury persists over time, as it is, for example, in arthritis or diabetes, and the pain persists because of progressive damage of the nerve fiber that produces altered signal conduction. In this view, PP goes along with lesion/disease duration. Time-related or injury-related definitions of pain are inadequate since the perception of chronic pain is an integrated sensory, emotional, and hedonic experience which is modulated by cognitive and affective function. As stated by Apkarian et al,⁷

the transition from acute to chronic pain entails also a transition in the salience of pain, wherein the condition shifts from viewing a painful percept as a sign of external threat into an indication of an internalized disease state.

Epidemiology studies reveal high prevalence estimates for CP. As an example, the World Mental Health version of the World Health Organization questionnaire⁸ reveals that the 12-month prevalence of CP was found to be about 37% in developed countries and 41% in developing countries.⁹ These figures clearly call for an inquiry on the burden and the costs (direct, indirect, and intangible costs) for the communities. As an example, the economic burden of pain in the United States was estimated to be \$560-635 billion in 2012.¹⁰ Predictably, a further mandatory step is to classify CP as disabling CP or non-disabling CP according to the interference that CP has on activity daily living, being disabling CP associated with higher multimorbidity, vulnerable social status and impaired quality of life.¹¹

On the Mechanisms of Chronification

Primary afferent nociceptors convey information to projection neurons of the posterior spinal cord. A part of these transmit to the somatosensory brain cortex through the thalamus and provide information regarding stimulus location and intensity. Other neurons project to the cingulate cortex and insula, through connection in the brainstem and to the amygdala, thus contributing to the affective component of pain experience. The brainstem is also the site where ascending information contact with the descending pain control system, previously considered as a sole inhibiting system but presently regarded as a modulator pathway. The complexity of this descending system has been in part understood: it serves to analgesia processes, to cognitive regulation of beginning and maintaining pain relief, and probably to emotional and anticipatory anxiety regulation. It also serves to modulate the interplay of depression and pain intensity as well as expectation which contributes, among others, to the complex mechanism

underlying placebo effects. Interestingly, the placebo response in CP may substantially differ from that in AP.¹² Psychological variability, such as anxiety, depression, vigilance, catastrophism, as well as attention/distraction and concomitant activities may contribute to modulate pain. Sensitization in the CNS is the condition of a hyper-excitability leading to an increase of nociceptive messages and is mediated by specific substances in the spinal cord and the brain. These substances have the ability to activate normally silent neurons and, therefore, to permit that the stimulus is continuously transmitted to the higher centers to produce an altered over-activation which translates into a persistent perception of anomalous sensation, specifically the pain. Similarly, the inner inhibitory system which should protect from pain becomes inactivated and other fibers are recruited to transfer nociceptive information in the presence of stimuli that are not painful per se (allodynia). Sensitization, hyper-arousal, increased affective responses, fear, sleep disorders contribute to the processing of pain, thus leading to the inadequacy, or at least incompleteness, of considering CP as an “outflow of spinal cord processing”⁷ Physiological and morphological studies point to the complex changes of brain structure in CP patients and those changes seem to differ in specific CP forms.¹³ Adaptation to pain is mediated, in part, by the interplay between long-term memory and learning mechanisms driven by peripheral, spinal cord, and brainstem mechanisms accompanying PP or CP; they all modulate limbic and prefrontal cortex.

Psychiatric Disorders and CP

In 1989, Merskey¹⁴ identified that most of the emotional change seen in people with CP is a consequence of physical disorder and that a common response to pain will be some degree of depression, irritability, and anxiety, and the same conclusion has been drawn by Katz et al.⁶ This means that people who suffer from CP are not necessarily affected by psychiatric disorders at first.

However, according to some studies,^{15,16} CP may be considered as a prognostic factor for depression, which, in turn, constitutes a prognostic factor for CP, thus underlying the bilateral nature of psychiatric disorders and CP, and how this relation should receive greater attention in primary care research.

Many CP patients have typical disabilities in addition to depression and anxiety. They frequently experience sleep disturbance, fatigue,¹⁷ and a reduced quality of life.¹⁸ Hence, the burden of chronic physical illnesses and mental disorders is even more significant.^{19,20}

Psychiatric disorders (eg, depression, anxiety, schizophrenia, and bipolar disorders) are often associated with one or more chronic physical diseases, such as cancer, heart disease, stroke, diabetes, and chronic obstructive pulmonary disease. This situation is even more alarming as the medical care provided to people with psychiatric disorders is lower than that received by those without mental disorders:²¹ in low- and middle-income countries, approximately 80% of people with severe mental disorders do not receive treatment. They constitute the second highest cause of morbidity and mortality in these countries.²¹

Regarding the strong association between psychiatric disorders and CP, it has been demonstrated that people with mental disorders have a tendency to develop more chronic diseases, such as obesity²² and diabetes.²³

Despite the small number of studies, it should be emphasized how important it is to make a diagnosis and initiate early management of the psychiatric component in patients with CP, which must be regarded as a chronic disease²⁴ and treated accordingly.

Policies and mental health care must be re-oriented to place more emphasis on the simultaneous diagnosis and treatment of mental disorders and other associated diseases.²¹

Mind-Body Therapies and CP Management

The human experience of pain is not merely somatic: it changes according to our mental, emotional, and physical condition.²⁵

Despite a range of psychological factors being important in the genesis and persistence of CP syndromes, they are not always routinely assessed in general practice or utilized to enhance treatment outcomes.²⁶ However, current mind-body theoretical models as well as specific psychological interventions (ie, psychotherapy, mindfulness meditation, yoga, etc.) are useful to prevent the pain progression to its chronic form and should be considered as an integration to pharmacological treatments.

Any treatment changing a person's mental or emotional state (eg, meditation or cognitive behavioral therapy-CBT-) can be called “mind-body” intervention since it will produce corresponding changes in the body.

Many studies demonstrated the efficacy of mind-body approaches for different clinical conditions associated with CP. Selfe and Innes²⁷ showed how specific mind-body practices may help alleviate pain and enhance physical function in adults suffering from knee osteoarthritis, while statistically significant

improvements with mind-body approaches were observed in pain, functional disability, psychological status, coping abilities, and self-efficacy in patients with both rheumatoid arthritis and a history of depression.²⁸ Furthermore, mind-body techniques may be useful in treating fibromyalgia pain.²⁹

CBT, the most common and successful psychological approach in treating pain, is effective in reducing disability and catastrophic reaction, whereas the effects on pain intensity are negligible.³⁰ CBT assesses dysfunctional emotions and thoughts and maladaptive behaviors, aiming to reduce the emotional and physical suffering associated with pain and to mitigate psychological disorders,³¹ such as anxiety and depression. CBT helps to reduce pain, by keeping it under control:³² patients learn how to manage and, therefore, to reduce disability and related psychic-emotional worry.^{33,34}

Mindfulness-based interventions (MBIs) include meditation and yoga, and focus on the importance of being fully engaged in the present rather than worrying about past or future events.³⁵ They also aim to accept the CP symptoms. This is helpful because emotional reactivity to pain can greatly exacerbate it:³⁶

pain related acceptance leads to enhanced emotional and physical functioning in chronic pain patients above and beyond the influence of depression, pain intensity, and coping³⁷

Relaxation training (RT) is a behavioral technique which helps to break the cycle of stress response favoring physiological and psychological relaxation, which will then facilitate rational and logical thought processes.³⁸ RT includes progressive muscle relaxation, breathing exercises, autogenic training, guided imagery, meditation, and audio-video programs, commonly used as facilitators.³⁹ The relaxation response may be associated with greater pain tolerance, as it has the potential to enhance the brain's responsiveness to endorphins^{40,41}, cause muscle relaxation, reduce hypervigilance and emotional reactivity to pain and desensitize central pain pathways.²⁵

Biofeedback is a method of increasing physical awareness, where patients learn to modulate muscle tension, peripheral body temperature, heart rate, by means of self-control and relaxation techniques, in order to reduce or eliminate CP symptoms, in particular those related to headache.⁴² It has been used as an adjunctive treatment in a number of pain settings with good effect, such as with orofacial pain,⁴³ headache in children,⁴⁴ phantom limb pain,⁴⁵ and musculoskeletal pain.⁴⁶

Finally, also hypnosis, guided imagery techniques, and yoga are MBIs used for CP treatment, and show promising

and encouraging results,^{47–49} even though further investigations are recommended.

Behavioral Responses to Physical CP

Post-traumatic stress disorder (PTSD),⁵⁰ a well-described consequence of trauma exposure characterized by re-experiencing the trauma, avoidance, and hyper-arousal, affects approximately 8% of all US citizens during their lifetime. PTSD is more likely to develop with increasing number of trauma exposures. Depression is highly comorbid with PTSD, possibly because both are associated with dysphoria and disturbances in mood and cognition. Likewise, substance abuse is elevated among trauma survivors, as a consequence of self-medication to treat trauma-related stress symptoms, or conversely, because substance abusers are more likely to engage in risky behaviors that can precipitate trauma exposure.

Post-traumatic stress symptoms (PTSS) are highly prevalent in CP patients and may affect pain symptomatology negatively, but there is still a great need to explore exactly how this occurs. Recent reviews demonstrated the evidence of mutual influence⁵¹ and reciprocal interdependence between pain and PTSD, hence highlighting the hypothesis that PTSS can have a negative effect on pain outcome as well as vice versa.

Roth et al⁵² found that PTSS contributed significantly to depressive symptoms, pain intensity, and pain-related disability, whereas some studies only reported increased psychosocial disability and not physical disability.^{53,54} However, it remains unclear whether the more severe symptomatology among CP patients with comorbid PTSS is related to the trauma exposure per se or the prolonged reaction to it (ie, PTSS/PTSD), even though some studies suggested that PTSS may be related to a more severe pain profile.^{55,56}

The relationship between CP and aggressive behavior has been indirectly assessed by studying the connection with anger, since aggressiveness is a behavioral reaction developing from anger feelings.

Notably, uncontrollable anger situations may trigger a “low road” of activation (eg, with minimal mediation by higher-order cognition), rapidly leading to anger displays and aggressiveness.⁵⁷ The use of psychoactive substances such as alcohol can escalate feelings of anger and facilitate the “low road” to rapid aggressive responses.⁵⁸

The way anger is regulated [eg suppression (anger—in) or expression (anger—out)] is consistently related to CP severity.^{59,60} The suppression or inhibition of strong

emotions has detrimental effects on physical health. Thus, a number of studies of anger regulation and pain have focused on suppressed anger, although they do not provide well-defined accounts of how the actual process of suppressing anger during upsetting events may affect pain.

Conversely, other studies widely reported greater tendency to manage anger via direct verbal or physical expression (trait anger-out) in CP patients, and it is associated with increased AP and CP responsiveness.⁶¹ Neuroimaging data support overlapping neural circuits underlying regulation of both pain and anger, which provide a potential neural basis for observed positive associations between anger-out and pain responsiveness. Although some null findings have been reported, more than 80% of published studies indicate that elevated trait anger-out is associated with greater CP intensity and greater CP-related dysfunction.⁶¹

Few studies exploring the impact of behavioral anger expression on pain responses have taken a “trait x situation” perspective.^{62–64} Burns et al⁶³ found that behavioral anger expression produced analgesic rather than hyperalgesic effects on experimental acute pain responses in healthy individuals, although this apparent analgesic effect only occurred in high trait anger-out individuals, while a study examining female fibromyalgia patients⁶⁴ showed that trait anger-out and behavioral anger expression appeared to interact, with the lowest pain intensity among high anger-out individuals who behaviorally expressed anger. Taken together, these studies suggested a “trait x situation model”, in which individuals with trait anger-out might reduce AP and CP responsiveness through the behavioral expression of anger.

Gender Differences in Pain Following Trauma

Based on literature supporting gender differences in a range of painful conditions such as headache, CP syndromes, and musculoskeletal pain,⁶⁵ sex differences in post-traumatic pain may also exist.⁶⁶ For instance, somatic complaints are increased among women trauma survivors compared to men with traumatic experiences.

Differences in the experience of pain between women and men are extensive and include severity and intensity of reported pain, pain sensitivity, prevalence of CP, pain associated to distress and anxiety, and pain-induced hyperalgesia.^{67–69}

Although the specific aetiological basis underlying these sex differences is unknown, it seems inevitable that multiple

biological and psychosocial processes are contributing factors. For instance, considerable literature implicates sex hormones as factors influencing pain sensitivity,^{70,71} even though their specific modulatory effect on pain among men and women requires further exploration. Psychosocial processes, such as pain coping and early-life exposure to stress, may also explain sex differences in pain, in addition to stereotypical gender roles that may contribute to differences in pain expression.⁷² Therefore, gender differences in pain perception could have important implications on the development of CP and related outcomes following a traumatic event.

Even though there is a higher prevalence of sexual trauma among women compared to men, men who have experienced sexual coercion are likely to have greater levels of somatic discomfort compared to men who do not experience it. Likewise, intimate partner violence is more likely to be reported by women compared to men, but it is associated with increased somatic symptoms in both men and women. Adverse childhood experiences may differentially affect men and women, although the data on this trauma exposure are less straightforward.⁷³

CP does not seem to be a frequent and direct consequence of such conditions. It may probably develop after a physical trauma, and become chronic according to the mechanisms underlined above, as, for example, in refugees or torture survivors in whom CP is often undiagnosed compared to the psychological sequelae.^{74–76}

CP leads to suffering, overwhelming disability, and personal impairment, pervading all aspects of social and emotional life. It has to be considered as not only a symptom but a real syndrome that requires a multidimensional approach. From this point of view, it is very important to investigate the emotional features associated with CP experience.

Psychosocial Factors of Pain

Perceived injustice (PI) is considered one of the most important psychosocial factors that may contribute to CP outcomes.

PI has been conceptualized as a set of cognitive appraisals reflecting the severity and irreparability of pain-related loss, externalized blame, and unfairness.^{77,78} It seems to be distinct from catastrophizing, although the two constructs are very similar.

Emerging research suggested that PI, consequent to CP development, might contribute to more severe pain which is referred to the self-reported consequences of pain on relevant aspects of one's life, including engagement in emotional, physical, cognitive, social, and recreational

activities.^{79,80} A high degree of PI is also consistently associated with greater pain report, depressive, and post-traumatic symptoms,^{81,82} as well as poorer treatment outcomes.^{82,83} To some extent, sense of injustice may sometime be based on real factors, such as unsafe working place at high risk for injury. It has different components that need to be treated accordingly; for example, anger that may be approached with CBT, while unfairness of retribution for which acceptance-based approach could be more adequate.

A high-quality social support network may provide an adaptive means of mitigating the negative effects of PI in CP patients. The current findings support the need for evidence-based behavioral pain management intervention that combines individual coping skills development with group sessions to bolster peer support around the experience of living with CP.⁸⁴

Pain and Suicidal Thoughts

As already mentioned, CP is strongly related to the emotional state of the individual and may be associated with suicidal ideation. The concepts of demoralization, hopelessness, and meaning that a patient attributes to his or her existence may influence and predispose to suicidal behavior, which is often associated with CP conditions.⁸⁵

However, the specific impact of CP versus AP, different types of pain (eg, medically unexplained pain), and risk factors for suicide in pain patients need to be elucidated.⁸⁶ In addition to the risk factors observed in the general population (family history of mental illness, past history of suicide attempts, presence of comorbid depression), elevated risk of suicide in patients with CP is associated with severe or recurrent headache, ambiguous diagnosis, medico-legal issues related to pain.⁸⁷ Suicidal ideation and depression can be precursors to suicide attempts, even though not everyone who has suicidal ideation makes an attempt of suicide.

Tang and Crane⁸⁸ reported that CP was associated with increased risk of suicide mortality and that rates of suicidal ideation and attempts were higher in individuals with pain than those without. Similarly, over 37% of patients receiving opioid therapy from their primary care physicians reported suicidal thoughts and over 20% reported a lifetime suicide attempt.⁸⁹

Ratcliffe et al⁹⁰ examined the association between four CP conditions (ie, migraines, back pain, arthritis, and fibromyalgia) and suicidal thoughts and attempts in Canadian population. The authors found that, even after controlling for psychiatric comorbidity, the presence of any pain condition was associated with increased risk of suicidal thoughts and attempts, and that this

relationship was particularly strong for migraines and back pain. This study highlights the importance of pain as a potentially independent risk factor for suicide, particularly among those with head pain or multiple forms of co-occurring pain. Thus, individuals with CP are at an elevated risk of suicide, yet psychosocial factors that might be involved in increasing or decreasing vulnerability for suicidal ideation and behavior have received little attention⁹¹. Interestingly, the issue could be also seen from the caregiver and social environment perspective. It is noteworthy that pain catastrophizing, a negative cognitive-affective response to anticipated or actual pain,^{92,93} strongly associated with suicidal ideation in previous research,⁹⁴ was found to be significantly correlated with perceived punishing partner behavior in CP patients.⁹⁵ Although catastrophizing may not be maintained by an operant conditioning paradigm in which catastrophizing is reinforced by partner empathy and attention, the possibility that some degree of reinforcement is involved in the maintenance of catastrophizing is not ruled out. Rather than related to pain severity and disability, punishing spouse responses are more typically related to depressive symptoms and affective distress⁹⁶ rather than to pain severity and disability. Partners who have not experienced pain themselves may fail to empathize with persons in pain, thus impeding appropriate emotional responses. When both spouses report CP, expressions of negative affect may instead promote emotion regulation because the affect is experienced with a spouse who may be more empathetic.⁹⁷ Interestingly, empathy for pain sufferers seems to be mediated by pain network associated with the affective component and not the sensory ones.⁹⁸

In conclusion, we suggest that pain catastrophizing represents an important processing factor in both pain perception and treatment and that it should be further investigated.

Addiction to Pain: Why Not to Get Rid of It? A Perspective from Our Clinical Experience

Habit

Common sense tells us that people naturally seek pleasure and avoid pain, but it is often wrong since pain is rarely a deterrent from destructive behavior. Sometimes the greater the pain, the more fiercely someone clings to it as seen in many conditions: from domestic abuse, when battered spouses repeatedly return to their abuser, to the Siria conflict, where militias never stop slaughtering each other. Thus, addiction to pain, mixed with hidden beliefs, is one of the toughest problems to solve in human psychology. There is a dependence to pain that overrides the physical and mental discomfort that pain obviously causes,

and different factors may be related to the difficulty that people experience in getting rid of it. Among them, there is firstly habit. As Thích Nhất Hạnh pointed out,⁹⁹ “people have a hard time letting go of their suffering. Out of a fear of the unknown, they prefer suffering that is familiar”. Letting go of their pain or suffering requires them to change, and this resistance to change is amplified with the need to face uncertainty and unknown.

Pain is, in part, a learned behavior,¹⁰⁰ and it is not just a response to a physical injury: it is made by a combination of physical events, emotions, memory of past events, and biochemistry. The body learns what is dangerous, and when it thinks there is danger, it creates pain, eventually becoming a habit. Therefore, no matter what is the input and where the injury is located, the body is so used to creating pain and it starts over and over doing it: just as cancer patients can develop nausea as a learned response to treatment and experience it even before chemotherapy is administered, pain patients learn to have pain even in the absence of a physical stimulus.¹⁰¹ Thus, in some cases, pain can be entirely “in the mind”.

The Role of Family: Pain as “Secondary Gain”

Several findings support the hypothesis that the family is an important factor in the etiology and maintenance of pain.¹⁰² Indeed, it has been proposed that the presence of rewarding events by family members, such as attention, sympathy, permission to avoid unpleasant obligations, and, sometimes, financial compensation, may increase the frequency and intensity of pain expression and reinforce the illness behavior.^{103,104} The supportive response of family members and friends, and even health-care providers, may serve to inadvertently encourage the expression of pain¹⁰⁴ contributing to the perpetuation of disability and dependence on others. On the other side, for patients who do not receive attention and understanding from their family members, the expectation of these rewards may result in a dramatic reaction to disease and persistent and dramatic expressions of pain.¹⁰⁵ This seems to be the core of understanding why individuals would continue to have disabling symptoms after their initial diseases had healed, and the concept behind this behavior is simple. Without a known biomedical cause, the symptom must be psychiatric; in the absence of overt psychiatric disorder (eg, anxiety or depressive illness), the patient must have either conversion disorder or “malingering”, ie, fabrication or exaggeration of physical or psychological symptoms to achieve a desired outcome. In either case, the patient would benefit in some way from being sick, receiving

a “secondary gain”, a psychoanalytic term which refers to perceived advantages or ‘gains’ patients derive from their symptoms, such as attention or avoiding responsibilities.¹⁰⁶ On one side, pain can be used to avoid facing other problems in family relationships, especially to elude intimacy,¹⁰⁷ on the other it may also stabilize the family, since dealing with the disease of one of its members may be the only way the family can continue to function.¹⁰⁸

However, this concept of secondary gain appears to have been over-used with harmful effects for CP sufferers. For instance, for women with CP with higher levels of disability than CP men, it has been speculated that they were using the pain as an excuse to stay at home¹⁰⁹, whereas Pilowsky¹¹⁰ warned of the danger of an approach which emphasizes the patients’ willingness not to take responsibility for their pain since it becomes a basis to blame patients for poor treatment outcomes.

Stance of Victimhood

Another factor that hampers in getting rid of pain is the stance of victimhood, which often seems to characterize CP people. Many patients entering counseling report their pain or depression and anxiety by defining themselves as victim of the past, by saying “I’d like to be out of pain, but I’m too weak. I feel I do not manage to handle it or get rid of it!”. They feel life unfair to them, take a life-position of not being fine, while everyone else is doing better. This can make the patient feel envy of others, waste time in social comparison, and lead to destructive behavior in which they can self-sabotage their lives, by often being inauthentic and playing psychological game of the victim.^{111,112} Playing the victim role elicits sympathy from others who, in turn, feed this “inner victim” every time they feel pity for them, creating a vicious circle. Indeed, even though advices and suggestions are constantly rejected, family members, often frustrated and angry, continue to offer help and support trying to rescue the “victim”.¹¹²

One of the reasons why patients take and maintain the stance of victimhood could be related to the “attention seeking”, considered as an act to elicit attention, in order to elicit validation from others. However, this concept has an ambivalent position in the literature and remains largely unresearched.¹¹³ There are many kinds of situations that can bring a person to have a sense of being a victim. It seems that victimhood describes some psychological lasting states of mind involving beliefs, attitudes, emotions, and behavioral tendencies: this results, on the one hand, from direct or indirect experience of victimization and, on the other hand, from its maintenance in the personal repertoire.¹¹⁴ According to some studies, the

emergence of a sense of victimhood may be related to the beliefs of being morally right but suffering from an injustice, and of being worthy of sympathy.¹¹⁵ The latter condition adds crucial aspects to the definition, by pointing out that the stance of victimhood can be also related to the victim's personality and that mere experience of the harmful event is not enough for the emergence of sense of being a victim.¹¹⁴

To break free from the victimhood role, it is crucial for the victim to recognize that the cycle of misery has been perpetuating by oneself. As Stutz and Michels underline,¹¹⁶ it is important to take responsibility for one's own life: the problem is never "out there", and once you appreciate this by connecting with your pain, power is gained knowing you alone create the circumstances of your life".

You may have been challenged, hurt, betrayed, beaten, and discouraged, but nothing has defeated you. No matter what you have been through. You are not a victim. You are a victor!¹¹⁷

Religious/Spiritual Beliefs and Sense of Guilt in CP Patients

Religious and spiritual beliefs and practices are factors that may play a role in pain maintenance. Religion and spirituality are related but they are not the same. Spirituality is often defined as the experience of transcendence, a search for the sacred, not necessarily associated with traditional religion¹¹⁸ which, conversely, implies a set of beliefs and practices around the existence of something sacred or divine such as God, a higher power, or an ultimate truth.¹¹⁹ Both religious and spiritual beliefs may help some people to accept their own illness or provide a sense of strength, security, and faith during a time of need.^{120,121}

A review on the possible relationship between religiosity and spirituality and pain¹²² reported that prayer is either the most common or the second most common strategy used to cope with pain, and Glover-Graf et al¹²³ showed that 61% of 95 CP patients declared that they prayed in response to pain, revealing that they had to come to rely more heavily on God or spiritual practices since the pain condition began.

Accordingly, spiritual beliefs can positively influence health, pain perception, and tolerance.^{124,125} Several researches showed an association between strong religiousness and lower levels of depressive symptoms, decreased stress, or enhanced relaxation;¹²⁶ a recent study by Ferreira-Valente et al¹²⁷ suggested that viewing

oneself as being "spiritual" regardless of religion may contribute to positive psychological adjustment in CP patients, although more research is needed to determine the reliability of this finding.

However, other studies reported that sometimes religion and/or spiritual coping are maladaptive (ie, negative religious coping), including deferring all responsibility to God, feeling abandoned by God when support is needed, or blaming God for difficulties.^{128,129} Many patients consider pain as a "religious matter" and enter psychotherapy stating "God wants me to feel this pain". Thus, pain is a divine chastisement and is seen as God's punishment for one's own sins; the suffering is the "cross to bear", interpreted as something worthwhile because it serves a higher purpose. Thus, pain relief may not be appealing to those patients for whom spiritual counseling may better serve, compared to clinical management.¹²¹ Indeed, religious and spiritual beliefs may modify appraisals of negative life events, such as pain, causing people to reassess the meaning of potentially stressful situations as "opportunities" for spiritual growth and learning, or as a part of a broader Divine plan, rather than a threat to personal identity.¹³⁰ S. Augustine (354–430 AD) explained that individuals do not know why God has permitted their pain, and believed that God allows Christians to endure suffering because it heals the swelling of pride, it is a test and proof of patience, punishes and eradicates sin, and it is a reminder to Christians of their mortality and need to rely on God.

On the other hand, by encouraging false hope for a miraculous cure, religious and spiritual beliefs may lead to disillusionment and depression, thereby exacerbating pain. Consequently, as mentioned above, some people may see their pain as either God's will for them or as punishment for past sins, and thus fail to make appropriate efforts to obtain pain relief.¹³⁰

Sense of Guilt

Sense of guilt could also play a role in pain maintenance. Guilt is a moral emotion that refers to the perception of having hurt somebody or done something wrong;¹³¹ it is also a self-conscious emotion, linked to self-identity and self-perceiving.¹³² Prolonged exposure to CP can potentially result in a "defeated self"¹³³ and some findings suggest that individuals with CP report greater levels of guilt than pain-free controls.¹³⁴ Guilt-proneness may be related to pain maintenance as a "fair punishment" for past wrongs. This is different from pain-related guilt where the patient reports feeling guilty about behaviors resulting

from the pain experience, which represents a limitation to the subject and results in being unable to participate in social and recreational activities and letting down family and friends. Psychological interventions (eg, acceptance and commitment therapy, CBT, mindfulness, etc.) could help individuals to increase their mental flexibility, to uncover their hidden beliefs, and to better manage the factors that may be related to the maintenance of pain. Understanding specific patients' beliefs and their personality styles could allow health professionals to identify specific interventions aiming at improving pain management and allowing people to live their life to the full, amongst the unavoidable challenges posed by life, including pain.

In conclusion, pain is a condition that will affect all individuals sometime during their lifetime. Inner convictions may be the underlying cause of adaptive or maladaptive pain responses. Pain, disability, and isolation may cause people to increasingly seek support and strength from the practices religious and spiritual institutions advocate. Religion and spirituality do not worsen pain for individuals who seek or believe in a benevolent universe or God, but fearful or pessimistic individuals may experience a worsening of their pain if they believe in a retaliating or punishing universe or God. Accordingly, further research is needed to study the relationship between religious and spiritual beliefs and practices and pain.¹³⁵

Pain, Vulnerability, and Resilience

Vulnerable is what is intact but at risk of being damaged.¹³⁶ this assigns to vulnerability a prodromal value. Shear¹³⁷ defined vulnerability as the condition of perceiving life events as uncontrollable, underlying that it is always present, although latent, to emerge upon context variability.

Different researches explored two dimensions to the psychological response to CP. The first dimension has focused on how "vulnerability factors", such as depressed mood, catastrophic thinking, and maladaptive pain beliefs, contribute to suffering in CP individuals,^{138,139} and decrease their quality of life,¹⁴⁰ by leading to the development of clinical interventions that focus on modifying maladaptive thoughts and behaviors, such as CBT¹⁴¹ or exposure therapy.¹⁴²

Vulnerability factors (in particular, stress) have been studied by Davis et al¹⁴³ in women diagnosed with chronic fibromyalgia (FM) and osteoarthritis (OA). Results showed that subjects with FM showed negative moods, fewer

positive affective resources, constrained social networks, reduced ability to mentalize, and poorer coping tools in comparison to patients with OA: this feature has been correlated with the reduced ability of FM patients to cope with stressful life events, suggesting that vulnerability factors affect individual resilience skills in individuals with CP.

The Authors also suggested that FM patients were more vulnerable to the negative effects of stress and that, within the CP conditions, there are important differences. Also painful social factors, such as ostracism, isolation, and prolonged social conflicts, may increase vulnerability to CP.¹⁴⁴

A second dimension has focused on how "resilience factors", such as pain acceptance, positive affect, and adaptive pain beliefs relieve pain-related distress and improve functioning and social integration.^{145–147}

Resilience is defined as a protective factor making people less vulnerable to future adverse life events,¹⁴⁸ and it has consistently been linked with improved mental health outcomes.¹⁴⁹ Both vulnerability factors (associated with worst outcome) and resilience factors (associated with better outcome and able to buffer against vulnerability factors) impact on pain outcomes. However, resilience factors mostly act on psychologically focused factors,¹⁴⁰ and therefore they should be evaluated in CP patients to provide adequate treatment and support to promote better outcomes. Positive emotional state, social support, and meaningful social ties can also contribute to adaptation to CP, thus improving resilience.

Little is known about the relationship between resilience and vulnerability, considered as complementary and inversely proportional. Noteworthy is the study by Chenneville et al¹⁵⁰ which sought to assess factors related to resilience and vulnerability among youth aged 13–24 living with HIV, as well as the impact of psychosocial factors on these constructs. Results showed that anxiety was a significant covariate of both biological and behavioral indicators of resilience, while gender was a significant factor associated with behavioral indicators of vulnerability. None of the psychological or demographic factors examined in the study were associated with substance use, which is a behavioral indicator of vulnerability and resilience. The Authors supported the need for clinicians to screen for and monitor anxiety symptoms among youth living with HIV in integrated care settings, in order to promote resilience and minimize vulnerability.

Pain and Evil and Vice Versa

To better address the meaning of pain and its consequences, a quote from Damasio Descartes' error¹⁰⁰ is

suitable: "Pain and pleasure are the levers the organism requires for instinctual and acquired strategies to operate efficiently". This quote reinforces the idea that CP should be approached with a broader view also regarding the environment in which the suffering person is located.

If the proposed solution to individual and social suffering bypasses the cause of individual and social conflict, it is not likely to work for very long.¹⁰⁰

Better than the roots of the disease, which are not recognizable any longer in CP, treatment should be focused on the consequences of pain experience in a given context. "All happy families are like one another, each unhappy family is unhappy in its own way".¹⁵¹ That is to say that the response to CP will not be the same but it will depend upon the environment and the solidarity found to approach the problem. "There seems to be far more varieties of negative than positive emotions in society's hedonistic culture"¹⁰⁰ The room for suffering people has become scant and, particularly, suffering without apparent reasons is not accepted by the involved individual and the society who harbors this individual. Should this person show a peculiar reaction to social acceptance/neglect?

Morality and pain

Humans are endowed with a natural sense of fairness that permeates social perceptions and interactions. This moral stance is so ubiquitous and fundamental component of daily decision-making and in the workings of many legal, political, and social systems, even though we may not notice it as such. Emotion plays a pivotal role in moral experience by assigning human values to events, objects, and actions. Although brain correlates of basic emotions have been explored, the neural organization of "moral emotions" in the human brain remains poorly understood. The automatic tagging of ordinary social events with moral values may be an important mechanism for implicit social behaviors in humans.¹⁵² The "moral brain" consists of a large functional network including both cortical and sub-cortical anatomical structures. Morality is a complex process, and some of the involved brain structures share their neural circuits with those controlling other behavioral processes, such as emotions and theory of mind. Brain areas participating in moral processing can be influenced also by genetic, endocrine, and environmental factors.¹⁵³ Some of these areas overlap with those involved in pain circuitry, but no interplay studies are so far available to link CP and morality. So far, the only clear relationship

between morality and pain is the immoral behavior determining harm, outrage, and injuries, either physical or psychological, favoring the onset of CP in victims of such immoral persons.

Affiliation, Empathy, and Judgment

Motivation to affiliate with others under conditions of stress is a common response in humans. The affiliation motive under such negative situations (experiencing pain as an example) appears to constitute an evolutionarily stable instinct.¹⁵⁴ Feelings of physical pain, empathy, and pro-social behaviors seem to be positively correlated. First-hand pain helps people to understand pain in others, thus affecting people's judgment of another's behavior. Empathy for people experiencing pain has been widely studied. However, few studies have addressed the role of pain-evoked empathy in moral judgment. As noted above, first-hand experience of physical pain facilitates people's understanding of a similar experience of others. Induced physical pain can render a person more sympathetic in a moral judgment, and self-assessment of trait empathy mediates the effects of painful feelings on moral judgment. In accordance with the positive function of pain proposed by Bastian et al,¹⁵⁵ "pain experience can improve affiliation with others, and such motivation can be explained by the 'tend-and-befriend hypothesis'". These findings provide support to the view that pain can serve as a positive psychosocial function. Contrariwise, less affective arousal and emotional contagion towards person's pain seems to be the mechanism of little or no engagement when the person in pain is immoral. The difference in brain responses to painful and non-painful stimuli being decreased compared to when the person in pain is moral or neutral to the observer.¹⁵⁶

From Individual to Social Evil and Consequent Pain

A single victim and his/her personal history of suffering/sufferance call for an individual rehabilitation process including acceptance of psychological and physical consequences, and revenge avoidance toward those who are considered his/her offenders. More difficult is to deal with groups or persons who have undergone persecution by other social groups due to political, religious, race, gender, social reasons. That is, victims of extreme fanaticism. In this case, it is much more difficult to understand the causes and why people share the idea and the need to victimize

humans for specific ideas or beliefs. Unfortunately, history provides plenty of such examples: Holocaust, Khmer Rouge victims, Argentinian *Desaparecidos*, current massacres by DAESH, extermination of Armenians and Tutsi, Gulag labor camps, and female genital mutilation. These human catastrophes clearly evoke the abnormal and pre-mediated thoughts that underlie massive evil behavior as Giorgio Pacifici clearly explains.¹⁵⁷ The “myth creation” and its drag force applies to all the above persecuting systems. It is the foundation for the “radicalization process” as seen, for example, in foreign fighters who join and participate with terrorist organizations.^{158,159}

Physical pain is a substantial part of these victims, as depicted in the Cluster of Evil.¹⁵⁷ However, besides being a direct consequence of persecution and torture, pain becomes a manifestation of suffering/sufferance in survivors, in its chronic form due to both somatization of psycho-pathological conditions and physical damage (as explained above). It is of interest that back pain and headaches are the most frequent conditions among refugees. These disorders are most frequently worsened by accompanying psychopathology and unclearly related to organic pathology.¹⁶⁰ It is noteworthy that victimized immigrant CP patients report high numbers of traumatic events such as forced evacuation, physical violence, and forced isolation.¹⁶¹ Cumulative effects of traumatic events contribute to the worst CP outcome in these people. The same applies to modern slavery and human trafficking particularly involving fragile populations (children and women). When dealing with all the above conditions, the presence of pain should be thoroughly sought, monitored, and controlled. Pain would, otherwise, be perceived by victims themselves as an obvious helpless and hopeless consequence to be accepted as it is, thus contributing to the misery of having been a victim.

Concluding Remarks

Except for aggression and impulsive behavior that may interfere with caregivers of chronic sufferers,¹⁶² the presence of CP does not seem to provoke any specific “bad” behavior, ie, nonrespectful and injurious behavior toward other persons. Such behavior in CP patients is directed inward/ towards themselves, as it is for suicidal ideation or analgesic misuse/abuse or drug dependence. All these features should be carefully examined in CP patients with knowledge of personal and family-specific disorders and dealt with through an appropriate psychology/psychiatry

approach.⁸⁷ Habit, secondary gain, sense of guilt, addiction to pain and other factors should also be sought in refractory patients. Abnormal morality in pain patients has to be confined to organic lesions in specific brain areas and, in these cases, pain represents a symptom of organic diseases to be approached with specific treatments. Interestingly, the presence of CP may be responsible for encouraging better moral judgment, and therefore, promote better social relationships. There is no real evil harboring in pain patients, and negative behaviors are strictly individualized and related to a particular personal or close environment rather than reflecting a social one. Evil action by groups must overcome their own rage, and this is not as simple as it appears. Among the many terms that are used regarding persecution and killing of persons as groups, the words genocide, excidium, extermination, shoah, the latter seems the best to describe not only the fact but also the condition in which survivors are. As Pacifici¹⁵⁷ explained, the term shoah means “disaster, desolation, catastrophe”, terms that are often used by patients with CP. The author also points out that whoever pronounces this term feels somehow to be on the side of victims, to share their pain. Something that always should happen when dealing with suffering and sufferance. It is necessary that pain syndromes are thoroughly examined to disclose any possible cause and to obtain a personalized adequate approach. Cultural, spiritual, geographical, ethnological, and other issues should not be neglected for any pain condition since they may be related to the individual experience and require deep knowledge for more effective and enduring treatment outcome.

The final version of the present review has been prepared during the Coronavirus lockdown. The pandemic is a novel experience that can only in part be compared with earthquakes, hurricanes, tsunami, or other natural disasters. The invisible enemy and the urge of social isolation that is mandatory to try to reduce the burden of deaths and that meanwhile goes opposite to the need of being together with others when disasters occur are the roots of a new modality of suffering that will have to be faced up soon. This topic is not discussed herein since it goes beyond the original purpose of the review.

Disclosure

The authors report no conflicts of interest in this work.

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