

Depression and Anxiety - Predictors of Postoperative Pain

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Abstract: *Any feeling of pain has both a sensory / psychological component and an emotional one regardless of the fact whether the source of pain is exactly identified. Feeling for pain may arise not only at tissue damage but also in the conditions of risk of their impairment as well as at absence of any damaging impact. Many authors describe acute pain as complex experience at which the psychological factors as beliefs and significance related to pain, the momentary social situation, the personality, the emotional status and factors from the past, play an exceptionally significant role.*

Keywords: anxiety, depression, pain.

1. Introduction

There are many data in literature about the cellular mechanisms, which contribute to origination of the postoperative pain. We showed interest in one of the factors, which exert impact over the perception for pain, its strength and successful treatment, to wit the psychological status of the sick persons in the perioperative period.

Many authors describe acute pain as complex experience at which the psychological factors as beliefs and significance related to pain, the momentary social situation, the personality, the emotional status and factors from the past, play an exceptionally significant role. (7), (8), (5), (18)

These factors modulate the individual perception, the experience and the announcement about the pain. They may change the main sensor transmission through psychological mechanisms. (8), (18)

Any feeling of pain has both a sensory / psychological component and an emotional one regardless of the fact whether the source of pain is exactly identified. When the medical doctor and the patient have the same understanding and consent for the reason for the pain, its significance and the treatment, then the properly elected regime of therapy has a good effect. The emotional component and the potential fear of suffering are usually undervalued through the confidence in the medical doctor's care. When harmful or threatening things occur during this care, which the patient is not prepared for, fear increases. At this time, emotional experience starts again to play an important role in the perception and the expression of pain on the part of the patient. In this manner, the psychological factors are neither the reason nor external factors of the experience of the pain, but are moderators of the expression, the communication and the level of the suffering felt. Further to that, these psychological factors also affect coping with acute pain. (16)

It is proven that feeling for pain may arise not only at tissue damage or in the conditions of risk of their impairment but even at the absence of any damaging impact. The psycho-emotional status of the person, the availability of depression, hysteria or psychosis are the determining mechanisms for

the origination of pain in the latter event. In other words, the interpretation of the pain sensations of the person, his/her emotional reaction and behavior may not correlate with the severity of the damage. In this manner, the perception of pain is subjective and depends on individual physiological, emotional and cognitive characteristics. (33)

In support of this assertion, in 1900 a British scientist in the sphere of physiology and neurobiology Sherrington C.S., analyzed the interrelation between the physiological and psychological aspects of the nervous activity. He was one of the first experts who defined pain as psychic supplement to the mandatory protective reflexes and ratified that the joint scientific investigations of physiologists and psychologists may be better backed up with arguments and effective if they are determined by each other. (26), (28), (27)

The so-called "**Gate Control Theory**" (GCT), developed by the Canadian psychologist Ronald Melzack and the leading British neuro-physiologist Patrick Waill also served as an impulse for a change of the perceptions for the pain. (30), (19). This theory reviews pain as a result of the interrelations between physiological and psychological factors.

According to GCT, the nociceptive information is transmitted from the nerve fibers of the cerebrum to the nerve fibers of the spinal cord. The authors designate this process as "gate". The gate in the spinal cord in its essence represents a gelatin-like substance in the horn which modulates the transmission of sensor information from the primary afferent neurons to the transfer cells in the spinal cord. (**Figure 1**)

The information gets to the brain where the "gate is open". At the partial or full "closing of the door", the receipt of impulses is troubled or is not complete.

In this event the descending psychological processes as emotions, attention, cognitions appear a part of the attempt for experience of the pain through their impact over the ascending signal. In 1968 Ronald Melzack finally formulated the definition "**pain**" as a **multidimensional complex with a multitude of sensor, affective, cognitive components**, which were later on adapted by the International Association for the Study of Pain-IASP). (14)

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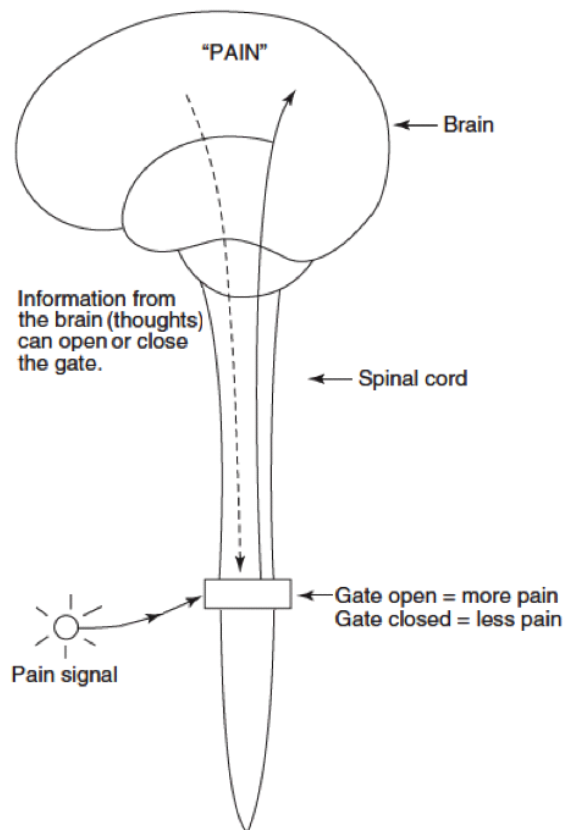


Figure 1: “Gate Control Theory” (21)

According to a number of authors, the pre-operative depression, anxiety and the so-called catastrophizing of the pain are in a position to intensify the pain experiences of the patients. Chronic pain in patients with depressive and anxiety disorders is encountered in over 70% of them. (4), (9), (11), (12), (17), (29), (34), (6), (3),

As early as in deep antiquity Hippocrates described depression as a “disease concealed in the brain”. Depression is characterized mainly by bad temper, loss of interest in carrying out ordinary activities and reduced capability for feeling pleasure. According to this definition, there is enormous spectrum of burden, symptoms and marks along with their classifications. DSM-IV (Diagnostic and Statistical Manual) is a frequently used classification of the psychiatric conditions. It is also applied at researches, insurance and hospitalization. It is a frequent prerequisite for the diagnosis of the depression or other mental diseases that any of the symptoms should result in clinically significant exhaustion or disorders in the social, professional or other important functioning. (1)

It is admitted that the chronic pain and the depression most probably have a bidirectional connection: depression is a predictor for persisting pain and pain is a predictor for persistent depression. (4), (11), (22)

The explanation is probably contained in the fact that the disturbed function caused by the pain results in social isolation which on its hand exerts adverse impact over the depressive symptoms and vice versa. (24), (15)

Further to that, the various spheres of the brain (the amygdala and the hypothalamus) also play a role both in

depression and the pain. (23), (20)

Moreover, when the depression and the chronic pain are comorbid conditions, the recognition and the treatment of the depression are difficult as the patients most frequently do not share their psychic complaints and do not receive treatment for them. (24)

There are many common psychological and physiological features between the chronic pain and the depression. One of the reasons for this are the noradrenalin and the serotonin, which are involved in the pathophysiology of the depression and coincide with the anatomic descendant inhibition of the pain perception. These two neurotransmitters act in the limbic system and in the proximity of the aqueduct to modulate the afferent nervous stimuli. The antidepressants, which exert impact over these neurotransmitters also have an analgesic effect irrespective of the availability of depression. This results in the question whether the depression is a consequence of the chronic pain or the chronic pain is manifestation of a variety of the depressive spectrum. There are researches in support of both theories. (32)

Anxiety is another significant psychological condition sometimes related to pain.

According to the ninth edition of Oxford Campbell’s Psychiatric Dictionary, anxiety is formulated as emotional status, which has a physiological (rapid breathing, vertigo, vasomotor changes) and a psychological component (premonition for threatening danger, fear). (13)

Most researches nowadays concentrate on the interrelation of pain and depression whilst the association with anxiety disorders is more seldom target of interest. Pain, on its hand, may cause a feeling of anxiety and this may make the sick person much more sensitive to pain. The consequence of all this is persistence of the pain syndrome. (31)

Moreover, the anxiety disorders and the chronic pain share common and behavioral processes, as, for instance, enhanced attention to forthcoming threat and anxious avoidance of physical exertion. (2), (25)

Most probably the connection of the pain with anxiety is equally significant as anxiety and depression are most frequently jointly manifested. There is a term „*agitated depression*“ or „*anxiety-depressive syndrome*“ in psychiatry. The matter here is about a state of depression, which is presented with anxiety including worry, insomnia and nonspecific panic. Even light symptoms of anxiety may exert great impact over the manifestations of the depressive disease. Finally, the availability both of depression and of anxiety make the treatment of the pain an even bigger challenge. The availability of one condition should change and not obstruct the diagnosis of the other condition. (10)

2. Conclusion

Depression and anxiety are a serious problem of modern society. The percentage of people who developed depression and anxiety prior to surgical interference, which is related to the availability of a disease or directly after it due to the

origination of post-operational pain is higher and higher.
This imposes their fast recognition and complex treatment.

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