“Influence of Psychological Factors on Patellofemoral Pain”

Consensus Meeting:
Understanding Patellofemoral Pain
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Patellofemoral pain
The source of pain remains unclear.
The Pathway of Pain Mechanisms:

- Mechanical
- Neural
- Chemical


From René Descartes. L'homme de Rene Descartes. Paris: Charles Angot (1664)


Gate Control Theory of Wall and Melzack

- The projection neuron (P) carries both nociceptive stimulation from small fibers (S) and non-nociceptive stimulation from large fibers (L) on the way to the brain.

- With no stimulation, the inhibitory neuron (I) keeps the gate "closed," and there is no painful sensation.

- With painful stimulation, the small fiber (S) blocks the inhibitory neuron (I), "opening" the gate for the projection neuron (P) to send on the painful stimulus.

- With the addition of non-painful stimulation, the large fiber (L) activates the inhibitory neuron (I), partially or completely closing the gate depending on the strength of the stimulation, and competes with the painful stimulation for access to the projection neuron (P).

Where Is Pain In the Brain?

The same part of the brain – the *anterior cingulate cortex* – responds to physical *and* emotional pain.
The National Institute of Mental Health Epidemiologic Catchment Area has found that about 22% of the United States general population reported previous joint or limb pain, of which one quarter was medically unexplained.

The pain may occur although the patient has never displayed any desired signs of tissue damage, like for example hysteria, stroke, fibromyalgia and indeed cases of low back pain. Commonly this pain is called "neuropathic" or "psychogenic", as opposed to "nociceptive" where physical causes are present.

Although the organic etiology of fibromyalgia remains unclear, an expanding literature has implied that psychological factors may be important in its induction and maintenance. Also, for decades, rheumatoid arthritis was regarded one of „classic“ psychosomatic diseases.

• Carlsson AM: Studies concerning pain assessment and egopsychological analysis of personalities in chronic pain patients. Thesis 1987; Karolinska Institute, Stockholm
• Rorschach H: Psychodiagnostik. Methodik und Ergebnisse eines Wahrenhmungsdiagnostischen Experiment (Deutenlassen von Zufallsformen). Humber, 1941; Bern
• Hypochondriasis

• Depression

• Somatization

• Conversion Disorder

Chronic Pain Syndrome
Somatoform Disorders

„the occurrence of one or more physical complaints for which appropriate medical evaluation reveals no explanatory physical pathology or pathophysiologic mechanism, or, when pathology is present, the physical complaints or resulting impairment are grossly in excess of what would be expected from the physical findings“

Mental pain is conceptualized as an apprehension of negative changes in the self and its functions that are attended by negative feelings.

Romano and Turner did not find any significant relationship between chronic pain and depression. In their opinion chronic pain may lead to secondary depression, which also occurs in acute diseases as well as chronic conditions unaccompanied by pain.

Simmonds et al. as well as Weisberg stated that there is the lack of evidence for "pain-prone personality", nevertheless they do not negate the mechanism of pain exacerbation and the further impairment of functional state by distress and depression.


Slater et al. evaluated patients with chronic low back pain (CLBP) receiving conventional treatment and those receiving therapy supplemented with behavioral treatment. He revealed significant clinical improvement in one or more indices describing pain, disability and depression in 47% of patients who underwent psychotherapy.

Dependency

Anger

Chronic Pain Patient Personality Profile

Passiveness

Overcontrol of Agression

• Sriram TG, Chaturvedi SK, Gopinath PS, Shanmugam V: Controlled study of alexithymic characteristics in patients with the psychogenic pain disorder. Psychother Psychosom, 1987; 47: 11-17
• Franz et al. extracted three Minnesota Multiphasic Personality Inventory (MMPI) data factors from low back pain (LBP), headache and pain-free subjects: lack of self-confidence, a strange bodily sensation, frankness. These three factors were then used as variables in an analysis that revealed that both headache and LBP patients were distinguishable from pain-free controls by their tendency to deny feelings of anger and aggression.

• Braha and Catchlore demonstrated difficulties in the appropriate expression of anger in chronic pain patients. According to them, the inhibition of anger may be responsible for pain.

• Hatch et al. reported individuals with tension headache, who showed proneness towards resentment, suspicion, mistrust and antagonism in their interpersonal relationships, measured by means of MMPI Cook-Medley scales and the State-Trait Personality Inventory test. In comparison with headache free controls, they were aroused towards anger more often but were more likely to suppress angry feelings.

Personality characteristics in patients with long-term patellofemoral pain were compared by Carlsson et al. with those of matched controls and other groups both of non-patients and of psychiatric outpatients with character disorders. The mean age of the knee patients was 27.5 years and 27.7 years of their matched controls. The group of controls was homogeneous as regards educational level and occupation, while the knee patient group was more heterogeneous, varying from unskilled employees to students and professionals. Personality was described using the self-administered dependency and alexithymia scales, the Karolinska Scales of Personality and the Rorschach inkblot method. The Rorschach measurements suggested significantly greater depression, hostility and passive attitude in the knee patients as compared to the reference data. The hypothesised alexithymic characteristics in the knee patients were not confirmed.

As first described by Sifneos in 1972, alexithymic features comprehend difficulties identifying and describing feelings, impoverishment of fantasy life, and excessive preoccupation with physical symptoms and external events.


Jensen et al. analyzed the psychological variables in patients with long-term patellofemoral pain. The group of 25 patients between 19 and 44 years of age with unilateral long lasting PFPS, and a control group of 23 year-old healthy subjects (age range, 18-44 years) participated in the study. Similarly to Carlsson et al. study, estimated groups consisted of males and females. The authors concluded that levels of mental distress were higher in the group with patellofemoral pain syndrome than in the control group, while levels of self-perceived health were lower. The results of the study indicate that the levels of knee pain and knee function correlate closely with the degree of mental distress and self-perceived health in individuals with patellofemoral pain.

Thomee et al. evaluated the way in which patients with patellofemoral pain syndrome experience their pain, coping strategies they use to control pain, and the degree of their well-being. Fifty patients, both women and men, 15-52 years old, were assessed with the multidimensional pain inventory (MPI), coping strategies questionnaire (CSQ) and Spielberger state trait anxiety inventory (STAI). The data revealed high scores reported for the coping strategy “catastrophizing”, which should be specially considered when planning the surgical treatment for these patients.

Witoński et al. evaluated the psychological characteristics of patients with the anterior knee pain syndrome. The mean age of patients was 18.8 years, ranging from 15 to 23 years. All of them were females, with the same activity level, without any special sports discipline practised. The history of pain had lasted for a minimum eight months to a maximum of five years. There were only minor differences in educational and social background between the subjects in the study groups. The evaluation was performed by means of the Minnesota Multiphasic Personality Inventory test (MMPI).


The psychological characteristics of patients with anterior knee pain syndrome

HOS - Hostility scale
ORG - Organic Symptoms
R-S - Repression-Sensitization
ES - Ego Strength scale
MAS - Manifest Anxiety scale
SI5 - Social Introversion subscale
SC2C - Schizophrenia subscale
Pa2 - Paranoia subscale
Hy4 - Somatic Complaints
Pa - Paranoia scale

**MENTAL CONDITIONS**
- Intense concentration or distraction
- Involvement and interest in low activities

**PHYSICAL CONDITIONS**
- Extent of the injury
- Inappropriate activity level

**EMOTIONAL CONDITIONS**
- Anxiety or worry
- Tension
- Depression

**PHYSICAL CONDITIONS**
- Medication
- Counterstimulation, e.g., massage

**EMOTIONAL CONDITIONS**
- Positive emotions
- Relaxation
- Rest

**CLOSE GATE OPEN**
- Focusing on the pain
- Boredom
“One leg is pharmaceuticals, another is surgery, and the third is what you can do for yourself. Mind/body medicine is strengthening the third leg, integrated with the other two legs”

Benson 1975