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Research article

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### ABSTRACT

Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage. When pain lasts only through the expected recovery period, it is described as acute pain. Chronic pain is the pain that lasts longer than 6 months and is const. Chronic pain and its psychological effects have the potential to reduce quality of life, not only for the person with pain but for the family as well. In some cases, the psychological effects of pain can outlive the actual chronic pain itself and become the major health disorder. Classification of pain is based on etiology of Pain such as Nociceptive pain, Somatic pain Visceral pain, Neuropathic pain, Peripheral neuropathic pain, Central neuropathic pain .Pain can be effectively be treated with drugs of various classes such as narcotics, non-opioids even with emerging potent therapeutic practices such as Ayurveda and Homeopathy. Thus, pain and psychological illness should be viewed as having reciprocal psychological and behavioral effects involving both processes of illness expression and adaption, as well as pain having specific effects on emotional state and behavioral function.

**Keywords:** Pain, Pain biomarkers, Classification of pain, 5 HT, Prostaglandins, Treatment of pain.

### INTRODUCTION

#### Pain

The word pain as from the Latin: *poena* meaning punishment, a fine or a penalty. A committee of the International Association for the study of pain has defined pain as an unpleasant sensory and emotional experience associated with actual or potential tissue damage. Pain acts through the warning signal against disturbances in body of an individual. The principle objective in treating the pain is to eliminate the cause of pain, but it is not always possible to do so. Analgesia is defined, as a state of reduced awareness to pain while analgesics are the agents which decrease the pain perception by increasing the threshold to painful stimuli.

Evidence has been brought forward linking chronic pain and mental health. Depression or other mood disorders

#### Symptoms of Pain

Pain causes different symptoms like restlessness, anxiety, fear, depression, spasm of abdominal wall, increased secretion of abdominal walls and catecholamine. It may also results in decrease cerebral function, restriction in movement of the involved area resulting in stasis of blood and muscular weakness. It may also leads in increased blood pressure, renal and gastrointestinal tract dysfunctions.

## EFFECTS OF PAIN

### Physical Effects of Pain

Pain results in poor wound healing process, weakness and muscle breakdown, decreased movement of the affected body parts resulting in an increased risk of blood clots in the veins (condition known as thromboembolism) and in the lungs (pulmonary embolism), shallow breathing and cough suppression which can increase the risk of pneumonia. Increased sodium and water retention by the kidneys, decreased gastrointestinal motility, increased heart rate, increased blood pressure, weakening of the body immune system causing decreased natural killer cell counts, sleeplessness, loss of appetite and weight are the other effects it has.

### Psychological Effects of Pain

It includes the anxiety, depression, fear, stress, loss of enjoyment of life and anger.

### Intensity

The intensity of pain may vary in range from slight through severe. It is experienced as having qualities such as sharp, throbbing, dull, nauseating, burning and shooting. It often has both an emotional quality and a sensed bodily location.

## TYPES OF PAIN

### Acute Pain

Acute pain has a recent beginning and a very short-life. The perception of acute pain occurs very rapidly, usually within 0.1 seconds after a stimulus is raised. It is also known as fast or sharp pain.

Acute pain is the body's alarm system; it signals that something is wrong or that you are in danger of injury. Acute pain is not felt in deeper tissues of the body. It encompasses pain of different magnitudes and durations, but does not persist beyond three months. Acute pain is very sudden in onset and severe in nature, although the pain intensity can vary from mild to severe. Acute pain is related with many clinical settings including surgery, medical illness such as myocardial infarction and sickle cell crisis, muscular-skeletal pain like rheumatoid arthritis, cancer, trauma, burns and labor pain. In general, physicians are more comfortable in treating acute pain, which may be due to soft tissue damage, infection and/or inflammation. It can be modulated and removed by treating its cause and through combined strategies using analgesics to treat the pain.

### Chronic Pain

Chronic pain is defined as the pain which lasts for more than three months. The perception of chronic pain begins within a second or more time after a stimulus is raised. It then gradually increases in intensity over a period of

several second or minutes. It is transmitted principally through the slow conducting type C fibers. The duration for this pain is about more than three months duration and occurs due to chronic disorders like arthritis, cancer, migraine, headache, diabetic neuropathy and nerve irritation. In most of the cases the chronic pain is a syndrome and can lead to endless suffering. Chronic pain is associated with changes at every level in the pain system and sensitization, a component of chronic pain may be due to altered physiology in the periphery or centrally in the spinal cord or brain.

### Physiology of Pain Pathway involved in pain perception

Following pathways are involved in the pain perception

- Pain stimuli
- Nociceptors and nociception
- Transmission of pain information via ascending tracts in the spinal cord to brain
- Transmission of pain impulses to the spinal cord by sensory neurons
- Spinal cord processing
- Processing of pain information in the brain

### Factors involved in Pain Sensation

Numbers of peripheral factors are involved in the pain sensation. When injury to cells occurs, histamine, 5 HT, peptide bradykinin, prostaglandins, Substance P and other number of mediators are released (Pain Biomarkers). Histamine gives acute anti-inflammatory response. Serotonin causes vasospasm in migraine attacks. Prostaglandins potentiate pro-inflammatory response of other mediators such as histamine and kinins. Enkephalin and endorphins are endogenous substances which are known as brain's own opiates. Enkephalin particularly occur in various parts of the brain, in areas of the spinal cord involved in transmission of pain sensation and in gastrointestinal tract.

## TREATMENT OF PAIN

### Allopathic Treatment

Treatment of acute pain includes removal of cause and use of analgesic medications. Chronic pain is difficult to treat because primary cause may be difficult to remove. Secondary depression is common in patients with chronic pain. Hence, treatment of chronic pain involves multidisciplinary approach including counseling, physical therapy and medication like antidepressants, anti-arrhythmic and opioids. Analgesics are divided into two main groups.

### Narcotic analgesics

These agents are capable of relieving severe degree of pain, but are also moderately or strongly addictive. This

group includes opioids, which binds to the opioid receptors and act centrally. Opioids are most potent and commonly used group its analgesic action is associated with a greater degree of adverse drug reactions, most of our dose dependent. Narcotic pain-relievers including codeine and hydro codeine are also used to treat moderate pain. Other narcotics, such as oxycodone, hydromorphone, morphine, fentanyl, methadone, pethidine, sufentanil and meperidine, are usually reserved for treating severe pain.

### Non- narcotic analgesics

These agents relieve mild to moderate degree of pain, and are considered non- addictive. This group includes aspirin and other analgesics and antipyretics, and they have no affinity for the opioid receptors and it acts peripherally. Non-steroidal anti-inflammatory drugs (NSAIDs), acts peripherally. The over-the-counter non-steroidal anti-inflammatory drugs (NSAIDs) including aspirin, ibuprofen, and naproxen as well as acetaminophen, are commonly used for mild pain. Oral corticosteroids such as prednisone and methyl-prednisolone are often administered to reduce pain associated with inflammation. Some severe painful conditions might require surgical treatments to disrupt the pain signal.

### Ayurvedic treatment

Pain is a sensorial modality, which in most of the cases represents the symptoms for the diagnosis of several diseases. It often has a protective function in body. From ancient times man has used many different forms of traditional therapy for the relief of pain, among them the medicinal herbs are highlighted due to their wide popular use in treating the pain. Many of pain medications are derived from plant extracts and are purified alkaloids. An example is *Papaver somniferum* from which morphine was isolated. Capsaicin is an active constituent of chilli pepper used in chronic pain treatment. Different

extracts of plants from the genus *Phyllanthus* are historically used to relieve pain. Apart from these plants, valerian, passion flower, American scullcap, *Eryngium falcatum*, *Piscidia erythrina* and crampbark also possess the analgesic properties. Curcumin, a polyphenol found in turmeric (*Curcuma longa*) rhizomes is said to be a natural cox-2 inhibitor. Some examples of plant constituents like glucosamine, chondroitin, bromelain (a digestive enzyme from pineapple core) and omega-3 fatty acids are used as pain killer. The efficacy of glucosamine and chondroitin, popular supplements for patients with arthritis it shows positive effect only amongst patients with moderate to severe pain.

### Meditation

Nowadays in developed country cultures, meditation plays an important role in pain modulation. It could bring down the respiratory rate and relive pain. Relaxation exercises may decrease the perception of pain. Pain increases as anxiety increases; using meditation method decrease in anxiety may help to reduce pain. Hypnosis is mind body techniques, which creates focused attention as well as filter out unpleasant as well negative sensation and receive positive sensation. The nature of chronic pain is that it is a long-term aspect of someone's life and a key element to lessening its interference is to take on board cognitive strategies and actively schedule these into the day's routine just as one would with medication and physical strategies.

### Homeopathy

Homeopathy is one of the traditional systems of medicine based on the principle that 'similisimilibuscurenter'. The drugs are given in different dilution dosages which will cure the disease. Homeopathic medicines properly diluted or 'potentized' may be used as prophylactics in treatment of pain. Homeopathic remedies are effective over the whole range of mental and physical disorders.

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