



# ***YOUR HEALTH***

An Official Monthly Publication in English of the Indian Medical Association since 1952 for the people to propagate Health Awareness in the Community

## **Face it, Know it Twist the Pain.**

**Coccydynia**

**Understanding Low Back Pain**

**Ethics in Palliative Care**

**Physiatry Approach to Knee Pain**

**Common Causes of Shoulder Pain & their Management**

**Trigeminal Neuralgia – An Unseen Demon**

**Phantom Pain: What we need to know?**

**Fibromyalgia and Generalized Pain Syndrome**

**Role of Algology (Pain Medicine) in Cancer Pain**

**Complex Regional Pain Syndrome and it's Management**

**Role of Psychiatrists in Management of Chronic Pain**

**Percutaneous Lumbar Sympathetic Neurolysis  
:A new hope in Peripheral Arterial Disease**



# YOUR HEALTH

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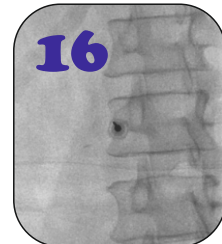
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## **The History of Medicine is the History of Pain**

*Editorial*

Dukh and dard, the most common words for pain, recur in Indian life and its religious and traditional medical discourses.

Pain is one of the most common conditions for visits to the physician. Pain may be described as anything from a dull ache to a sharp stab, ranging from mild to extreme. Pain can keep you from doing things you enjoy, and prevent you from talking and spending time with your family and friends. Pain may even affect your every mood and ability to think. Pain can even make it hard to eat and sleep, which can worsen other symptoms.

The pain occurs more in old age and women are more susceptible to pain. According to study done by Saxena et al., there is a huge burden of Chronic pain in India by the prevalence rate of 19.3%, which translates into 180–200 million adults. There was a higher prevalence in females (25.2%). Pain prevalence



**Dr. Kakali Sen**  
Honv. Editor, Your Health

### **THE HISTORY OF MEDICINE IS THE HISTORY OF PAIN**

- Asclepius, the god of medicine attending to a patient in pain





increased steeply beyond the age of 65 years old<sup>1</sup>. This is just the tip of the iceberg, as a substantial number of people with pain do not consult a physician. India's first nationwide pain-mapping exercise has found that one in three people aged 45 or older lives with pain and that Bengal has the highest proportion of people whose pain hinders their daily activities<sup>2</sup>.

Pain can be classified as acute or chronic, based on some characteristics. Chronic pain normally lasts for longer than 3 months. Pain might be felt in one part of your body or it may be widespread.

Pain Management is a medical approach with scientific methods and alternative healing to study the prevention, diagnosis, and treatment of pain. The one-size-fits-all approach is not suited for pain management. Physicians' approach to managing pain depends on the type of pain, location, and individual. There are various methods and approaches like lifestyle modification, medications, therapies and non traditional methods. Some recent advances like Transcutaneous electrical nerve stimulation (TENS) therapy etc. are also there.

An effective pain management treatment regime will provide pain relief along with the ability to regain range of motion and mobility. Managing pain can reduce stress, blood pressure, and heart rate, and positively affect healing. Pain involves cognitive, motivational, affective, behavioral, and physical components impacting the quality of life. Pain management specialists would advise returning to

various activities at a gradual pace causing healing of pain.

The most important factor in pain management is pain assessment. Pain management is an important part of care and referred to as "the fifth vital sign". Pain can protect us by forcing us to rest an injury or to stop any activity that worsens it. The experience of being in pain is horrible, frightening, and can have a profound effect on your quality of life.

With this message, Team Your Health would like to present this Month's Your Health to you. Several articles on pain management have been presented by renowned pain physicians of Country.

Stay safe. Stay painfree.

Ref:

1. Saxena AK, Jain PN, Bhatnagar S. The Prevalence of Chronic Pain among Adults in India. *Indian J Palliat Care*. 2018 Oct-Dec;24(4):472-477. doi: 10.4103/IJPC.IJPC\_141\_18. PMID: 30410260; PMCID: PMC6199848.
2. Mohanty SK, Ambade M, Upadhyay AK, Mishra RS, Pedgaonkar SP, Kampfen F, O'Donnell O, Maurer J. Prevalence of pain and its treatment among older adults in India: a nationally representative population-based study. *Pain*. 2023 Feb 1;164(2):336-348. doi: 10.1097/j.pain.0000000000002705. Epub 2022 Jun 2. PMID: 36638306.

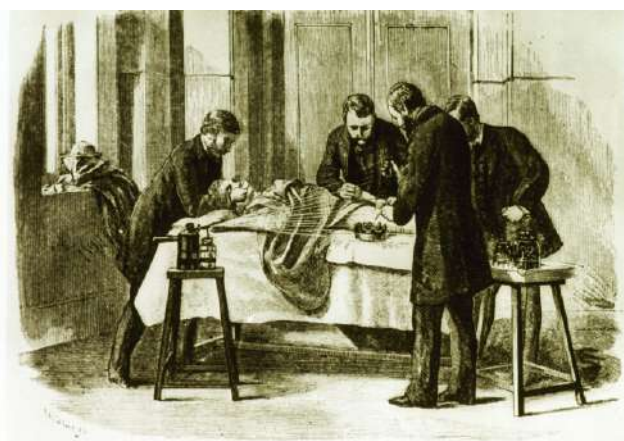
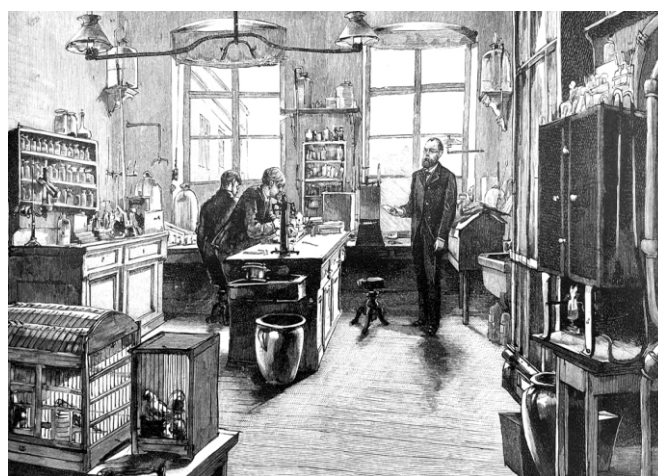


FIG. 12.  
This figure represents the general arrangement of surgeons, assistants, etc., etc., in an operation performed with.



## World Patient Safety Day 2023 : Engaging Patients for Patient Safety

World Patient Safety Day 2023 will be observed on 17 September under the theme "Engaging patients for patient safety".

World Patient Safety Day is one of the important global public health events organized every year on 17th September to impart knowledge and guidance on reducing patient harm; happening due to lack of proper awareness and information among the patients, healthcare staffs and insufficient healthcare facilities.

World Patient Safety Day was established in May 2019 when the 72nd World Health Assembly adopted a resolution WHA 72.6 on 'Global action on patient safety'. This global campaign builds on a series of annual Global Ministerial Summits on Patient Safety initiated in 2016, as well as the high-level advocacy and commitment of major international and national stakeholders.

Patient safety is a health care discipline that emerged due to the growing complexity of health care systems and the rise of patient harm in health care facilities. Patient harm due to adverse events is

one of the leading causes of morbidity and mortality worldwide. The available evidence suggests that hospitalization in low- and middle-income countries leads to 134 million adverse events annually, which in turn result in 2.6 million deaths. In high-income countries, approximately one in ten patients is harmed while receiving hospital care.

Patient and family engagement is a pivotal strategy to advance safety in healthcare. As users of the healthcare system with first-hand experience of the entire patient journey, the perspectives of patients, families and caregivers are invaluable in improving patient safety. The impact of meaningful patient engagement is remarkable, with studies showing a potential reduction in the burden of harm by up to 15%, saving countless lives and billions of dollars each year. Therefore, patient and family engagement has been embedded as a fundamental principle in the World Health Assembly resolution (WHA72.6) on Global action on patient safety and in the Global Patient Safety Action Plan 2021-2030.

Meaningful engagement of patients, families and communities can improve health care quality and patient safety. Patients and their families are the only constants in the increasingly complex health care systems. A patient may receive care from different facilities and multiple care providers from different disciplines. We need to,

- Facilitate efforts to engage and empower patients, families and communities to play an active role in their own care;
- Bring the voices of patients and people to the forefront of health care;
- Create an enabling environment for partnerships between patients, families, communities and health professionals.

WHO Patients for Patients Safety (PFPS) is a programme of WHO Flagship Initiative "A Decade of Patient Safety 2021-2030" that engages and empowers patients and families and facilitates their partnership with health professionals and policy-makers to make health care services safer worldwide. Patient is the only one person gone through his/her entire care process: Her/his and family voice should be heard fully.

### From the Desk of Secretary



**Dr. Samarendra Kumar Basu**  
Hony. Secretary, Your Health

It is an honour for me to write as a guest editor for August 2023 issue of IMA publication YOUR HEALTH in the field of Pain Management.

Pain medicine is crucial in modern healthcare because it helps improve the quality of life for millions of people. It enables the management of acute and chronic pain, ensuring that individuals can recover from injuries, surgeries, or chronic conditions with reduced suffering.

In this issue, we bring you expert insights, patient stories, and the latest research findings that shed light on the ever-evolving landscape of pain medicine. As we navigate these uncharted waters, we invite you to join us in the pursuit of better, more compassionate pain care for all.

Pain medicine specialists utilize a multidisciplinary approach, incorporating medications, physical

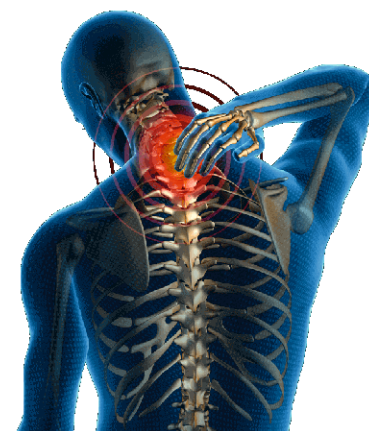
therapies, interventional procedures, and psychological support to address pain comprehensively.

In recent year the scope has broadened to include personalized treatment, alternative therapies (non pharmacological approach), advanced intervention (nerve block,) telemedicine (remote pain consultations), palliative care, research and various innovation.

In essence, this magazine acts as a catalyst for positive change, fostering awareness, understanding, and compassionate care within the realm of pain medicine. It has the potential to improve the lives of countless individuals by providing knowledge, support, and advocacy in the field of pain management.



**Dr Suvadeep Bose**  
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## Common Causes of Shoulder Pain & their Management

### Introduction -

Most of the patients coming to Physical Medicine and Rehabilitation OPD with shoulder pain come with preconceived idea of having suffering from 'Frozen Shoulder'. But, that not true at all. Apart from Adhesive Capsulitis, commonly known as 'Frozen Shoulder', shoulder pain can present due to a plethora of other primary cause. Main pathology may involve Rotator cuff or Bursal inflammation, Traumatic fracture or dislocation or subluxation, Ligament injury or sprain etc. Pain in shoulder may be part of larger systemic causes also like initial presentations of Rheumatoid Arthritis, Osteo-Arthritis etc or it may be a Referred pain to left shoulder from cardiac ischemic pain or to right shoulder from Gall Bladder related pain. That's why, proper evaluation and diagnosis are very important.

### Epidemiology-

Estimated annual incidence of shoulder pain is around 0.9% to 2.5%. Also, point prevalence is 18% to 26%. Out of those, prevalence of Primary Adhesive Capsulitis is only 2% to 5.3% whereas Secondary Adhesive Capsulitis prevalence lies around 4.3% to 38%. Rotator cuff related pathology varies from 9.7% to as high as 62%. This data clearly highlights the varied etiology of shoulder pain and the need for proper diagnosis before starting definitive treatment for better outcome.

### Etiologies-

Common shoulder problems that we encounter in our day to day practice can be grouped in few categories for the ease of understanding

1. Adhesive Capsulitis - Primary or Secondary
2. Rotator Cuff and other tendinopathy problems- acute Tendinitis, Chronic Tendinopathy, Shoulder impingement, Painful arc syndrome, Tear (Partial or complete), Bicipital Tendinitis etc
3. Bursitis- Sub-acromian, Sub-deltoid, Sub-scapular, Sub-coracoid
4. Traumatic- Fracture, dislocation, sprain,



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subluxation,

5. Neuropathic- Suprascapular nerve involvement, Injury to axillary or long thoracic nerve, Brachial plexopathy etc.

6. Systemic and other conditions- Osteo-arthritis, Rheumatoid Arthritis, Tuberculosis, Neoplastic conditions etc

7. Referred pain- Cervical spine pathology, Mediastinal pathology, Cardiac ischemia, Cholecystitis etc

### Clinical approach-

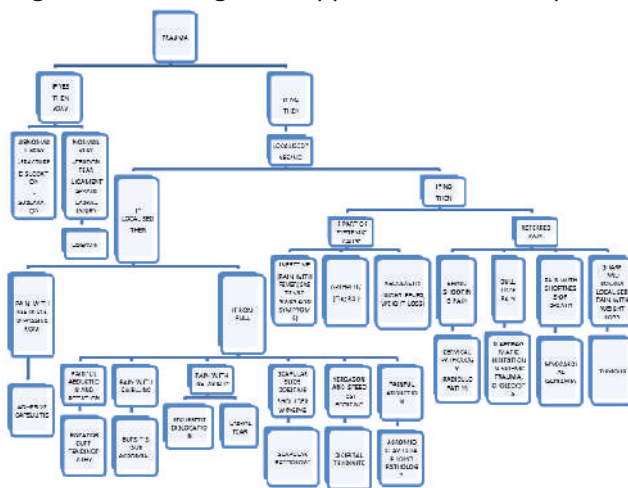
In clinical approach of shoulder pain history of night pain, chronic weight loss and other constitutional symptom indicating underlying serious and even life threatening conditions should be assessed promptly and as early as possible and proper measures should be taken quickly for better outcome. Signs of inflammation i.e. swelling, raised temperature can be either due to trauma, infection, collagen vascular diseases etc.. In evaluation of shoulder, Range of Motion (ROM) examination is very important. If both



active and passive ROM is found to be restricted in all direction, we can conclude with the positive diagnosis to be adhesive capsulitis. But, if passive ROM is found to be full, but active ROM is restricted, diagnosis of adhesive capsulitis is excluded and further assessment is needed for other differential diagnosis. To clinically locate primary cause for shoulder pain some special tests are found to be very useful.

Test	Diagnosis ( if positive)
Empty can test, drop arm test	Rotator cuff tendinopathy
Speed test, yergason test	Bicipital Tendinitis
Neer's sign	Shoulder Impingement
Scarf test	Acromio clavicular joint injury/sprain
Apprehension test	Shoulder Instability
O'brien test	Labral injury, AC joint pathology

Algorithmic of diagnostic approach in shoulder pain:-



**Investigation-**

Relevant investigation to make a confirmatory diagnosis will include laboratory reports like complete blood count, ESR, CRP, fasting blood sugar, TFT, uric acid level etc.

In radiological investigation X-Ray of joint helps to diagnose bony pathology of injury and degeneration, Musculo Skeletal Ultrasound is helpful to detect any soft tissue injury or inflammation like tendon injury, tear, sprain, bursitis, ligament and labral injury, presence of fluid or joint swelling in shoulder complex. Some patient may also require CT and MRI to reach confirmation in case of labral injury for surgical planning, in suspected infective or neoplastic conditions

In some cases, Shoulder pain may be due to systemic causes like Rheumatoid Arthritis, Osteo-Arthritis,

Infective pathology like tuberculosis, neoplastic condition. Then the primary cause should be diagnosed properly and promptly and treated as per guideline for respective diseases. Referred pain coming from cardiac ischemia, cholecystitis, cervical spine pathology, mediastinal pathology must be diagnosed clinically and with the help of ECG, ECHO, USG abdomen, CT and MRI of abdomen and chest.

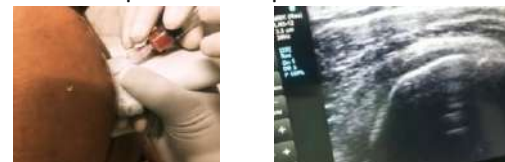
**Treatment-**

**Conservative management**

In treatment of shoulder pain medication along with exercise and modalities are helpful. Thermal modalities like UST and IFT help to alleviate symptoms and accelerate recovery. But, advice of exercise and modality must always follow a proper and comprehensive diagnosis. Random prescription of therapeutic exercise and modalities can do more harm than good for patients. In patients of long standing refractory pain not amenable to conservative management, interventional pain management comes as boon to provide efficient and permanent relief from symptoms.

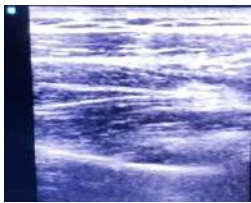
**Interventional Management**

In painful inflammatory conditions Ultrasound guided Intra articular corticosteroid injection might be helpful. But, we must exclude any partial or complete tear in tendon and ligament structure at the diagnostic level. In those conditions of tear and injury and in prolonged degenerative conditions intra articular and intra substance injection of autologus Platelet Rich Plasma does wonder in relieving long term complications of patients.



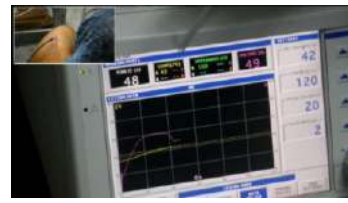
**Fig 1 and 2: Autologus Platelet Rich Plasma in partial tear of supraspinatus muscle**

Ultrasound guided Suprascapular nerve block with hydro dissection is an effective method to relieve symptoms in suprascapular entrapment and rotator cuff pain conditions. Hydro dilatation in adhesive capsulitis may help to improve pain and ROM in patients immediately.



**Fig 3 and 4: USG guided corticosteroid for suprascapular nerve block and Bicipital tendinitis**

In long term refractory pain conditions we use Radio Frequency Ablation of pain producing sensory nerve to achieve long term pain free period in degenerative arthritic condition not amenable to any other curative management. It is a safe and day care procedure. Usually pulsed RFA for suprascapular nerve is done under USG or C-arm guidance. Visco-supplementation with hyaluronic acid is given chronic degenerative condition like Osteo-Arthritis.



**Fig 5 and 6: Pulsed Radio Frequency Ablation of Suprascapular nerve**

**Conclusion-**

To conclude, all Shoulder pain is not Frozen Shoulder. Under no circumstance a patient of shoulder pain should be stamped frozen shoulder and sent randomly to get physiotherapy, exercise and modality. Patients with shoulder pain can suffer from a variety of primary cause, some of them may be serious and life threatening, requiring prompt and proper diagnosis. Customised and comprehensive management including exercise, modalities, medication and intervention should be practiced after proper diagnosis of clinical condition.

*With Best Compliments*

**In Pain Management**

Newly launched

**Veil**

Polmaxcoxib Capsules 2 mg

**ETORO™**

Etoricoxib 90 mg Tablets

**ETORO TH™**

Etoricoxib 60 mg + Thiocolchicoside 4 mg Tablets

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**Prabin M**

Pregabalin 75 mg & Methylcobalamin 750 mcg IP Capsules

**Prabin D**

Pregabalin 75 mg & Duloxetine 20 mg Capsules

**Prabin NT**

Pregabalin 75 mg & Nortriptyline 10 mg Tablets

**HETERO HEALTHCARE**

A-202/B-201, Dipti Classic, 32/34, W.T. Suren Road, Andheri (E), Mumbai - 400093.

## Role of Psychiatrists in Management of Chronic Pain

Pain disorder, also known as somatic symptom disorder with predominant pain, is a condition characterized by chronic and severe pain that significantly impairs a person's daily functioning and quality of life. While the exact neurobiological mechanisms underlying pain disorders are not fully understood, research has provided insights into the neural pathways and brain regions involved in the perception and modulation of pain.

**1. Pain Processing Pathways:** Pain signals from the body are transmitted to the brain through two primary pathways - the spinothalamic tract (STT) and the dorsal column-medial lemniscus pathway (DCML). The STT carries information related to the sensory aspects of pain, such as location and intensity, while the DCML pathway conveys more specific information, like fine touch and proprioceptive sensations. These pathways play a critical role in pain perception and integration.

**2. Pain Modulation:** The brain has complex pain-modulating systems that can amplify or reduce the perception of pain. One such system is the descending pain modulation pathway, which involves the periaqueductal gray (PAG) in the brainstem. The PAG can inhibit or facilitate pain signals at the spinal cord level, influencing the overall pain experience. Dysregulation in this system may contribute to the development of chronic pain disorders.

**3. Sensory and Affective Components:** Pain disorders are not solely related to the sensory aspects of pain. The experience of pain also involves emotional and affective components, which are processed in brain regions such as the anterior cingulate cortex (ACC) and the insula. These regions are associated with the emotional and motivational aspects of pain and may contribute to the development of chronic pain conditions.

**4. Neuroplasticity:** Chronic pain disorders are often associated with neuroplastic changes in the brain, where repeated pain signals can lead to structural and functional alterations in neural circuits. This phenomenon can result in pain sensitization, where the brain becomes more sensitive to pain signals over



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International Distinguished Fellow  
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Ruby General & Medica Superspeciality

time, leading to increased pain perception.

**5. Central Sensitization:** Central sensitization is a process that occurs in the central nervous system (CNS) when persistent nociceptive input (pain signals) leads to an amplification of pain responses. This hypersensitivity can cause pain to be felt even in response to non-painful stimuli. Neurobiologically, central sensitization involves changes in the excitability of neurons in the CNS, including increased synaptic efficiency and altered neurotransmitter activity. Dr Ranjan Bhattacharyya, MD, DNB (Psychiatry), MNAMS International Distinguished Fellow American Psychiatric Association Visiting Psychiatrist, Ruby General & Medica Superspeciality Hospital.

**6. Genetics and Epigenetics:** There is evidence to suggest that genetic and epigenetic factors may contribute to an individual's susceptibility to developing pain disorders. Genetic variations in pain-related genes and epigenetic modifications that affect gene expression could influence pain sensitivity and the risk of chronic pain conditions. 3 The symptoms of





**Fig 1: Symptoms of Complex Regional Pain Syndrome (CRPS).**

Complex regional pain syndrome have been summarized in Figure 1.

The psychology of pain syndrome refers to the role of psychological factors in the experience, perception, and management of chronic pain. Chronic pain syndrome is characterized by ongoing pain that persists for longer than the typical healing time of an injury or disease.

Psychological factors play a significant role in chronic pain syndrome, as they can influence the intensity and duration of pain, as well as the impact it has on an individual's quality of life. Here are some key points related to the psychology of pain syndrome:

**1. Pain Perception:** Psychological factors can influence how individuals perceive and interpret pain. Research has shown that factors such as anxiety, depression, catastrophizing (exaggerating the negative aspects of pain), and attentional bias (focusing on pain cues) can amplify pain perception.

**2. Emotional Distress:** Chronic pain can lead to emotional distress, such as depression, anxiety, and anger. Conversely, emotional distress can also worsen pain severity and increase disability. It creates a cycle in which pain leads to emotional distress, which then

exacerbates the pain.

**3. Mind-Body Connection:** The mind and body are interconnected, and psychological factors can influence pain through mechanisms such as stress, emotions, and physiological processes. Stress can contribute to muscle tension and increased pain sensitivity, while relaxation techniques can help alleviate pain symptoms.

**4. Coping Mechanisms:** Psychological factors also influence how individuals cope with chronic pain. Adaptive coping mechanisms, such as positive thinking, problem-solving, and social support, can promote better pain management and quality of life. Maladaptive coping strategies, such as avoidance, self-isolation, and substance use, can worsen pain and impair functioning.

**5. Treatment Approaches:** Psychological interventions, such as cognitive-behavioral therapy (CBT) and mindfulness-based approaches, are often used as part of a multidisciplinary approach to managing chronic pain syndrome. These interventions focus on changing negative thought patterns, improving coping strategies, and enhancing self-management skills.

**6. Biopsychosocial Model:** The biopsychosocial model recognizes that chronic pain is influenced by biological, psychological, and social factors. It emphasizes the importance of a holistic approach that considers the interplay between these factors in understanding and managing chronic pain.

Understanding the psychology of pain syndrome is crucial for healthcare professionals as it helps inform personalized treatment plans that address both the physical and psychological aspects of pain. By taking a comprehensive approach, individuals with chronic pain can strive for improved pain management, enhanced functioning, and better overall well-being.

It's important to note that pain disorders are complex conditions with multifactorial causes. Psychological factors, such as stress, anxiety, and depression, can

also influence the perception and experience of pain. Therefore, a comprehensive approach that considers both the neurobiological and psychosocial aspects of pain disorders is necessary for effective assessment and treatment. Treatment may involve a combination of medical interventions, psychological therapies, and lifestyle modifications to manage the symptoms and improve the individual's overall well-being.

Psychological management of pain syndrome involves utilizing various psychological interventions to help individuals cope with and reduce the impact of chronic pain. It's important to note that psychological approaches are often used in conjunction with medical treatments and should be part of a comprehensive pain management plan. Here are some common psychological techniques used in the management of pain syndrome:

**1. Cognitive Behavioral Therapy (CBT):** CBT is a well-established approach used to help individuals identify and modify unhelpful thought patterns and behaviors associated with pain. By changing negative thought processes, patients can develop healthier coping strategies and improve their overall well-being.

**2. Mindfulness-Based Stress Reduction (MBSR):** MBSR involves practicing mindfulness meditation and yoga to increase awareness of the present moment without judgment. This can help individuals develop a different relationship with their pain, reducing stress and anxiety related to pain experiences.

**3. Relaxation Techniques:** Techniques such as deep breathing exercises, progressive muscle relaxation, and guided imagery can help individuals relax their bodies and minds, potentially reducing pain intensity.

**4. Acceptance and Commitment Therapy (ACT):** ACT encourages individuals to accept their pain as a part of their lives while focusing on living a meaningful and fulfilling life despite pain. It helps individuals clarify their values and take steps toward a richer life experience.

**5. Biofeedback:** Biofeedback involves using electronic devices to monitor physiological responses related to pain (e.g., muscle tension, heart rate). Through feedback, individuals can learn to control these responses, leading to a reduction in pain.

**6. Education and Psychoeducation:** Providing individuals with information about pain and its underlying mechanisms can empower them to better understand their condition and manage their symptoms effectively.

**7. Coping Skills Training:** Teaching adaptive coping strategies can help individuals respond to pain-related challenges more effectively, reducing the emotional and behavioral impact of pain.

**8. Support Groups and Peer Support:** Participating in support groups or connecting with others who experience similar pain can provide emotional support and validation, reducing feelings of isolation and despair.

**9. Hypnotherapy:** Hypnosis can be used to help individuals alter their perception of pain and reduce pain intensity.

**10. Graded Exposure Therapy:** This approach involves gradually and safely exposing individuals to activities or movements that they may have avoided due to pain, helping to reduce fear and avoidance behaviours.

It's essential to work with a qualified mental health professional or pain management specialist to determine the most appropriate psychological interventions for each individual's unique needs and circumstances. Pain management is often multifaceted, and a combination of medical, psychological, and lifestyle interventions may be necessary to achieve the best outcomes.

## Coccydynia

### Introduction and anatomy

Coccydynia, or coccygodynia, is the type of pain in the region of the coccyx or tailbone (Simpson 1859). Approximately 1% to 3% of low back pain can be attributed to coccydynia. Though coccydynia or chronic coccygeal pain has been identified and been treated by different methods since the 16th century, its treatment can be difficult and sometimes controversial because of its multifactorial nature. Many physiologic and psychological factors are involved in its etiology.

Most cases of coccydynia resolve within weeks to months with conservative treatment, but for a few patients, the pain can become very debilitating and may require intervention.

coccyx is the most distal and terminal segment of the spine. It is a wedge shaped bone that consists of 4 fused vertebrae. The first coccygeal segment has rudimentary articular processes called the coccygeal cornua that articulate with the sacral cornua. The word 'Coccyx' in Greek means beak of a cuckoo due to similarity in appearance. The distal part of filum terminale is inserted into the first segment of coccyx.

The coccyx is the site of attachment of many important muscles of the pelvic region. Anteriorly, there is the levator ani muscle and the sacrococcygeal ligament. Lateral edge is the insertion site of coccygeal muscles, sacrospinous ligament, sacrotuberous ligament and some fibres of the gluteus maximus muscle. Inferiorly, the iliococcygeus muscle inserts at the tip of the coccyx. These muscles, tendons and ligaments support the pelvic floor and help in maintaining voluntary bowel control.

Postacchini and Massobrio (1983) provides a morphologic classification of the coccyx with 4 different types.

- **Type I:** coccyx curved slightly forward
- **Type II:** coccyx more markedly curved and pointing anteriorly
- **Type III:** very sharply angled anteriorly
- **Type IV:** subluxed at the sacrococcygeal or intercoccygeal joint



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Coccygeal bones with markedly forward curved, sharply angulated, subluxed, and scoliotic morphologies are associated with coccydynia.

Along with two ischial tuberosities, coccyx also provides weight-bearing support to a person in the seated position. It also provides positional support to anus.

### Incidence and etiology

Exact incidence of coccydynia is not known. Though it is more common in obese and female patients, most common etiology of coccydynia is external or internal trauma. External injury happens during backward fall or fall on the buttock causing fractured or dislocated coccyx. Internal injury occurs during childbirth, especially during difficult or instrumental. Rapid weight also can be a causative factor due to loss of



cushioning effect.

Minor trauma due to repetitive or prolonged sitting on hard, narrow or uncomfortable surfaces, Non-traumatic etiology due to degenerative joint or disc disease, hypermobility or hypomobility of the sacrococcygeal joint, infection, neoplasia and abnormal coccygeal morphology are the other causes of coccydynia.

Sometimes coccydynia can be radicular or referred pain or associated with nonorganic causes- such as somatization disorder and other psychological disorders. Though the typical coccygeal tenderness is not present in these conditions.

### Clinical presentation

The classic feature of coccydynia is localised pain over the coccyx. Patients tell that their tailbone hurts badly. The pain usually becomes worse on prolonged sitting, leaning backwards while seated, prolonged standing and rising from a seated position. Pain may appear during sexual intercourse or defecation. History may reveal a recent trauma with an acute onset of pain or an insidious onset of pain without clear inciting factor.

Physical examination reveals tenderness over the coccyx. The coccyx can be grasped between forefinger and thumb during rectal examination. Manipulation will elicit pain and may reveal hypermobility of sacrococcygeal joint. Others, such as infection etiologies (eg, pilonidal cyst), masses, and pelvic floor muscle spasms should be ruled out.

### Investigations

Antero-posterior and lateral radiographs of coccyx are essential for diagnosing coccygeal pathologies. Lateral views should be taken from standing and sitting position.

Laboratory investigations are rarely required to rule out any infective and neoplastic pathology

For infectious or malignant concerns, CT scans and MRIs should be considered.

### Management

*Conservative management*

Conservative management includes rest, cold packs, hot baths, laxatives to prevent constipation, Avoiding sitting on hard surfaces is also very important. Cushions are used for coccyx pain because they help reduce pressure at the painful area during sitting. The current evidences describe that U-shaped wedge cushions are preferred.

TENS (Transcutaneous electrical nerve stimulator) is strongly recommended as an adjunctive treatment.

#### *Interventional management*

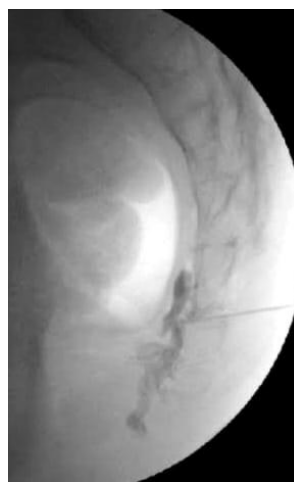
Image-guided anesthetic and corticosteroid injections at pain generator are good option to relieve coccydynia. Typical injections for coccydynia include corticosteroid injection at the sacrococcygeal joint, ganglion impar sympathetic nerve block, and nerve ablation procedures.

Regenerative injections, such as platelet-rich plasma and stem cell injections offer alternatives to typical interventional management.

Surgical treatment is very rarely required for coccydynia

### Conclusion

Coccydynia is a common condition which is often ignored. Most of the occasions, it is self-limited and mild. Although the majority of patients respond to conservative treatments, some patients require aggressive therapy like interventions. In these cases, the etiology of the coccydynia may be complex and multifactorial. A multidisciplinary approach employing physical therapy, ergonomic adaptations, medications (NSAIDs), injections, and, possibly, psychotherapy leads to the greatest chance of success in these patients.



## Percutaneous Lumbar Sympathetic Neurolysis : A new hope in Peripheral Arterial Disease

### Case:

Mrs Sumitra, a 38 yrs old female patient attended Pain Management OPD two years back (2021) from Farraka, Murshidabad with large non-healing ulcer over dorsum of right foot. It was associated with severe pain and vascular claudication. She visited multiple renowned hospitals of the country. Everyone advised surgical lumbar sympathectomy or amputation of the foot. But she was adamant that she will not go for any surgery because amputation of great toe did not help to restrict the disease. CT angiography was performed. We found total stenothrombotic occlusion of right external iliac artery noted immediately after its bifurcation from the common iliac artery. Total steno occlusion of left proximal superficial femoral artery noted with absent flow in the proximal 2/3rd of the superficial femoral artery. We performed diagnostic lumbar sympathetic block with lignocaine under C- arm guidance at the L2, L3, L4 and L5 level bilaterally. Pain reduced; temperature of bilateral legs increased. After successful diagnostic block we performed alcohol neurolysis of lumbar sympathetic ganglia. Pain got relieved instantly and the ulcer healed within 8 months. In post procedure CT angiogram opening up



Pre-procedure  
CT angiography

of collateral vascular supplies were noted.

Peripheral arterial disease is an atherosclerotic disease which predominantly involves the arteries of the lower limbs. Globally around 236.62 million

people suffers from peripheral arterial disease, among them 72.91 million from lower and middle-income countries.

### Risk factors associated with atherosclerotic vascular disease

- Age
- Male gender
- Smoking
- Diabetes mellitus
- Hyperlipidaemia



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- Hypertension
- Race (Western>Asian)
- Hyperhomocystinemia
- Increased C-reactive protein
- Chronic renal insufficiency

### Stages of peripheral artery disease

- Asymptomatic (without symptoms).
- Mild claudication (leg pain during exercise).
- Moderate to severe claudication.
- Ischemic rest pain (pain in legs even at rest).
- Ulcers or gangrene.

### Treatment

Treatment of patients with early detected PAD involves modifying risk factors and offering specific interventions to relieve symptoms. Cessation of smoking, reducing blood pressure and cholesterol

levels with medical treatment (antiplatelets like aspirin, statins and Cilostazol) may help to slow down the progression of the disease in the lower limb. However, conservative measures such as use of antiplatelet agents, exercise regimens and therapy with vasodilators are largely ineffective in severe symptoms such as short-distance claudication, rest pain, ulcers and gangrene. It may be addressed with interventions such as angioplasty and bypass surgery.

**Mechanism of Action of Lumbar Sympathetic Neurolysis**

The tone of the smooth vascular muscles, and the vascular cross-section, is subject to autonomic regulation via vasoconstrictor fibers of the sympathetic nervous system. Chemical lumbar sympathectomy works by inducing coagulative necrosis of both vasomotor and sensory sympathetic fibers traversing the sympathetic chain.

**Conclusion**

Mohan et al have reported the prevalence of PVD in South Indian diabetics to be 3.9%[2].The prevalence of PVD in diabetics increases with age increasing from 3.2% in those below 50 yrs. of age to 33% in those above 80 yrs. of age[3]. The prevalence of PVD in diabetics also increases with the duration of diabetes from 15% to 45% at 10 to 20 years respectively after the diagnosis of diabetes [4]. With better disease care, longevity of our diabetics is significantly increasing and it is not surprising to see an increasing prevalence of PVD in Indian diabetics.

Percutaneous lumbar sympathetic neurolysis is easy to perform, it reduces pain instantly and helps to salvage the limb by opening up the collateral blood supplies. By this method we can bypass the major surgeries. It is a day care procedure, so no need of prolong hospital stay. It is very much cost effective. Percutaneous lumbar sympathetic neurolysis can now be added to the armamentarium of the management of peripheral arterial disease.

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Post procedure CT angiography (opening of collaterals)



Pre procedure status of Ulcer



2 weeks after the procedure-increased vascularity



3 months after the procedure



Patient position -Prone



2 ml of absolute alcohol was injected at each level after administering local anaesthetic.



## Trigeminal Neuralgia – An Unseen Demon

Amongst so many chronic painful conditions of head and neck - Trigeminal neuralgia (TN) is one of the commonest and severe form of sudden, severe facial pain. It is a type of chronic neuropathic pain. It affects the fifth cranial nerve i.e. trigeminal nerve.

Typically, patients present with intense, sudden onset, sharp, shooting, electric shock like pain on one side of the face. Patients may complain of numbness, tingling, burning or throbbing sensation on the one side of the face. These painful attacks may occur several times of a day for days to weeks to months or even longer. Each attack may persist few seconds to few minutes.

Trigeminal nerves are a pair of cranial nerve. It is the 5<sup>th</sup> cranial nerve having further three branches supplying upper, middle, and lower portions of the face.

- Ophthalmic division (V1) supplies scalp, forehead, front of head.
- Maxillary division (V2) supplies cheek, upper jaw, upper lip, teeth, gum, side of the nose.
- Mandibular division (V3) supplies lower jaw, lower lip, teeth & gum.

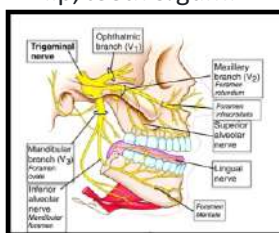


Fig 1: Anatomy of Trigeminal nerve

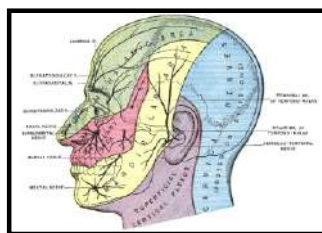


Fig 2: Distribution of nerve supply of Head & Face

Most commonly involved branches are V2, V3, V2+V3 (together), then V1. Mainly unilateral involvement happens, rarely bilateral involvement is seen.

There are mainly two types of TN:

**Type 1** or typical or "classic" form of the disorder is characterized by intermittent, extreme, sudden burning or shock-like pain lasting for few seconds to

few minutes and but can last up to two hours. Electric shock like pain starts with brushing teeth, talking, drinking, eating, being exposed to wind, washing face, shaving, etc. Some people avoid their daily activities or social contacts because of fear of impending attacks.

**Type 2** or "atypical" form of the disorder that is characterized by constant aching, burning, stabbing pain and usually less severe than in Type 1.

In progressive TN, the pain-free intervals gradually disappear and TN becomes trigeminal neuropathy.

There are different pathophysiological theories of TN. Trigeminal Convergence projection theory says that continuous or recurrent nociceptive inputs from head and neck converge to spinal trigeminal nucleus (subnucleus caudalis). From this nucleus there is release of neurotransmitters which causes excitation of second order neurons. These increased signal reaches the various parts of brain - Thalamus, Limbic System, Somatosensory cortex. As a result, patient



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complains of increased pain.

If functional MRI (fMRI) done in case of TN patients, increased signal activity seen in - spinal trigeminal nucleus, thalamus, ACC, hippocampus, putamen, pre motor cortex.

**Management of TN –**

- Counselling and education regarding the disease itself
- Medical management – Initial treatment started with anti-neuropathic medications e.g.

**Gabapentin, Pregabalin (Calcium Channel blockers)**

**Amitriptyline, Nortriptyline (Tricyclic antidepressants)**

**Carbamazepine, Ox-carbamazepine (Sodium Channel blockers)**

Dose of the drugs need to be adjusted on medical advice by pain specialist/ neurologists/ medicine specialists. Combination of the drugs work better than a single agent used.

If with continuation of the medications the TN pain does not satisfactorily improved, or with the increases in the dose of the medications, side effects happen then the next step of is interventional pain management.

- Interventional Pain management for TN – There are multiple modalities of treating TN. One of the most efficient way of management is

**Radiofrequency ablation of Gasserian Ganglion.**

**Microvascular decompression (Surgical manoeuvre)**

**Percutaneous balloon compression (with Fogarty catheter)**



FIG 3: Foramen Ovale (on the skull)



FIG 4: Foramen Ovale (Fluoroscopic view)

**Technique of Radiofrequency ablation of Gasserian Ganglion –** After anti-septic dressing draping, needle is entered 2-3 finger lateral to the angle of the mouth. Then the needle is introduced under the fluoroscopic guidance through the foramen ovale. Lateral fluoroscopic view is taken to confirm the depth of the needle. Tip of the needle will be at the junction of the clivus and petrous part of temporal bone. Cerebrospinal fluid may come out of the needle.

Using the latest technology, radiofrequency probe is used go into the cranium, to stimulate the trigeminal nerve or gasserian ganglion.

Sensory and motor stimulation are checked. Then the 3 cycles of radio frequency ablation are done to the gasserian ganglion or the particular division of the trigeminal nerve.

After the radiofrequency ablation, patient got discharge on the same day or the day after the procedure. Cold compression and analgesics are given for local site pain relief.

Anti-neuropathic medications are continued, but the dose modifications are done according to the clinical scenarios.

As per clinical experience it is seen that the patient remains pain free, or decrement of pain for 1-3 years (varies). Through interpersonal referral from general physician, neurologists these kind of patients suffering from TN can be treated by interventional pain specialist by using the latest technology and expertise.



Fig 5: Radiofrequency (RF) needle are placed at 2-3 cm from the angle of the lip & gone upto the gasserian ganglion (intra-cranial)

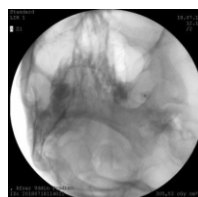


FIG 6: RF needle in end-on view on Foramen Ovale (fluoroscopic view)



FIG 7: RF needle is going in depth under fluoroscopic guidance

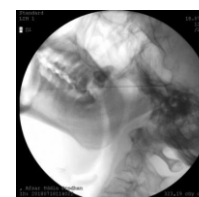


FIG 8: RF Needle has gone up to the cranium at the junction of the clivus and petrous part of temporal bone.

## Complex Regional Pain Syndrome and its Management



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#### BACKGROUND:

Complex Regional Pain Syndrome (CRPS) is one of the chronic severe and debilitating painful conditions attended in our PMR outdoor and indoor. First case of CRPS was reported in seventeenth century by French surgeon Ambroise when King Charles IX was suffering in persistent pain and contractures of arm after bloodletting. In American Civil War (1864), Silas Mitchell observed a chronic pain syndrome in soldiers who suffered traumatic injuries. He described this syndrome using the term 'Causalgia'. At the beginning of the 20th century, Paul Sudeck identified the localized bone atrophy by x-rays which was called 'Sudeck's atrophy'. In 1916 Rene Leriche suggested that Causalgia was caused by overactivity of sympathetic nervous system. He treated these patients with surgical sympathectomy. In 1950, John Bonica introduced the phrase 'Reflex sympathetic dystrophy (RSD)'. International Association for the Study of Pain (IASP) differentiated RSD and causalgia in 1979.

#### WHAT IS CRPS?

**C = Complex:** Varied and dynamic clinical presentation

**R = Regional:** Non-dermatomal distribution of symptoms

**P = Pain:** Out of proportion to the inciting events

**S = Syndrome:** Constellation of symptoms and signs

It is a Disorder characterized by sympathetically maintained pain and related sensory abnormalities, abnormal blood flow, abnormalities in motor system and changes in both superficial and deep structures with trophic changes. CRPS is of two types:

CRPS type I (also known as RSD) often involves only one limb with pain, minor edema, after a period of immobilization.

CRPS type II (also called causalgia) is seen in presence of a known injury to a nerve.

#### WHO ARE SUFFERING MOST?

CRPS is seen most commonly in 45 -55 years age group, but patient with any age can suffer and more frequently affects women (70 - 80%). 60% of CRPS cases involve in the upper extremities. Incidence of CRPS ranges from 5.46 to 26.2 per 1,00,000 persons year. Prevalence subsequent to trauma ranges from 0.03 to 37% based on retrospective studies. Risk factors are smoking, post-menopausal female, adult age, immobilization, spasticity.

#### WHAT ARE THE CAUSES OF CRPS?

Causes of CRPS are not well understood. But it occurs following various clinical conditions, like Fracture (16-46%), Strain or sprain (10%-29%), Post surgery (3%-24%), Contusion or crush injury (8%-18%), Stroke (10-48%), Spinal cord disorders (6%), Repetitive motion disorder (carpal tunnel syndrome), Myocardial infarction, Burn, Infection (leprosy), Radiation therapy etc. There is no correlation between the severity of trauma and the degree of CRPS symptoms. No psychological factor predisposing for CRPS has been identified. However, 80% of CRPS patients had 'stressful life events' close to the time of diagnosis.



**PATHOPHYSIOLOGY:**

Exact mechanism of CRPS is not clear. However, three hypotheses are mainly proposed: neurogenic inflammation, vasomotor dysfunction and maladaptive neuroplasticity. Neurogenic inflammation causes swelling in central nervous system and nociceptive sensitization (extreme sensitivity or allodynia). Blood flow disorder due to alteration of sympathetic nervous system causes swelling and discolouration of limb. Brain adapts constant pain signals. CRPS is result of an inappropriate response to tissue injury.

**CLINICAL PRESENTATION:**

Characteristic triad of symptoms are autonomic, sensory and motor disturbances. Pain is the hallmark of the disease. Allodynia, hyperesthesia & hyperalgesia are usually seen. Distal limb edema and skin temperature are raised in 80% cases. Skin color is initially red, but becomes pale in chronic cases. Sweating, nail and hair changes (increased growth), disuse atrophy, weakness, distal tremor and cramp are mostly noticed. Patients present also present with mood disturbances (anxiety, depression) and sleep disturbances. Contralateral limb even can progress to all 4 limbs

**LANKFORD AND EVANS STAGES**

**Acute stage (0-3 months):** In this stage, patients present with severe burning pain, pitting oedema, warmth, reddish skin, hyperesthesia, increased hair and nail growth, joint stiffness.

**Subacute or dystrophic stage (3-12 months):** In this stage, pain worsens. Brawny oedema, pallor, ridged nail, cyanosis, stiffness are also seen.

**Chronic or atrophic stage (> 12 months):** Pain reduces in this stage. Glossy skin, joint contractures, atrophy are presented.

**DIAGNOSIS:**

CRPS is primarily diagnosed by clinical sign and symptoms. For clinical diagnosis, Budapest

criteria(2003) were more sensitive and specific. Following four criteria (A-D) must be met for diagnosis:

- A.** Continuing pain which is disproportionate to any inciting event
- B.** At least one symptom in three or more categories
  - Sensory – Hyperesthesia, allodynia
  - Vasomotor – temperature asymmetry, skin colour changes/asymmetry
  - Sudomotor/oedema – Oedema, sweating changes/asymmetry
  - Motor/trophic – Decreased ROM, motor dysfunction(weakness, tremor, dystonia), trophic changes (hair, nail, skin).
- C.** At least one sign in two or more categories
  - Sensory – hyperalgesia (pinprick), allodynia (light touch/temp/pressure)
  - Vasomotor – temperature asymmetry (> 1 °C), skin colour changes/asymmetry
  - Sudomotor/oedema – oedema, sweating changes/asymmetry
  - Motor/trophic – decreased ROM, motor dysfunction (weakness, tremor, dystonia), trophic changes (hair, nail, skin)
- D.** No other diagnosis can better explain the signs and symptoms

**DIFFERENTIAL DIAGNOSIS:**

There are other diseases with similar clinical presentations. Cellulitis, Lymphedema, Stress fracture, Acute synovitis, Septic arthritis, Tenosynovitis, Thrombophlebitis, DVT, PVD, Arterial insufficiency, Dupuytren's disease, Post herpetic neuralgia, Vasculitis should be differentiated from CRPS.

**INVESTIGATIONS:**

- Blood tests: Routine blood and inflammatory markers are tested to rule out underlying infection or inflammatory arthritis.
- X- Ray of both hands/feet: Although there is no change in X-ray at acute stage, subchondral osteopenia (fig.2) is seen in subacute stage and

extreme osteopenia/osteoporosis is noted in chronic stage.

- Three-phase bone scintigraphy (fig.4): It is highly sensitive and specific for CRPS. Significant uptake is seen in the metacarpal bones specially in the subacute stage.
- Sympathetic ganglion diagnostic block: This is a diagnostic block by local anesthetic agents to confirm whether it is sympathetic mediated pain or not. This is performed usually under fluoroscopy or USG guidance as vital structures are present nearby.
- Regional intravenous diagnostic block & Phentolamine infusion test (alpha-1 receptor antagonist) are other diagnostic procedures.
- To exclude other diagnosis, MRI (may show marrow oedema but not specific for CRPS), EMG-NCS, Doppler flow meter, Vascular scintigraphy, Vital capillaroscopy are performed.

#### TREATMENT:

Early recognition is the key of management. Treatment of CRPS requires an individualized comprehensive rehabilitation protocol on holistic approach to achieve complete recovery and prevent from progressing to irreversible stage of CRPS (Pachydermia). Comprehensive rehabilitation protocol consists of pharmacological therapy (medication), Nonpharmacological therapy (Physiotherapy, occupational therapy etc.) & interventional procedure. Surgery is the treatment of choice when conservative management fails.

**Pharmacological therapy:** Following medicines are initially prescribed for management of pain, inflammation or swelling and demineralization:-

- Non-steroidal anti-inflammatory drugs (NSAIDs): first line treatment in early stage, although their definitive efficacy is not proven.
- Bisphosphonates: Oral and intravenous both bisphosphonates (Risedronate, pamidronate etc.) are primarily used for bone mineralization. They significantly relieve spontaneous pain and improve functional status in early stage.
- Oral corticosteroids: Short course of steroid may be indicated in acute stage for their anti-

inflammatory properties.

- Tricyclic antidepressant (Amitriptyline, Nortriptyline), Gabapentin and Pregabalin may be prescribed. They act as adjuvants by inhibiting pain pathways & neuronal plasticity.
- Opioids like N-methyl-D-aspartate (NMDA) receptor antagonists (Ketamine, Methadone) are effective in CRPS-I due to phenomenon of central sensitization.
- Vitamin C and N-acetylcysteine have some preventive role for CRPS in wrist fracture cases.
- Dimethyl sulfoxide 50% cream reduce pain & inflammation in acute phase.

**Non pharmacological therapy:** Apart from medications, role of non-pharmacological therapy is utmost important. Therapeutic exercises like Joint Range of motion exercises, stretching & strengthening exercises are advised primarily to improve limb mobility. TENS, Paraffin bath & Hyperbaric oxygen therapy have significant role in management of pain, swelling & stiffness. rTMS is suggested in some studies for neuromodulation. Desensitization technique, Hand function training and gait training are important for functional improvement. There are some positive evidences of mirror therapy (fig.5), Qigong, acupuncture for treatment of CRPS.

**Interventional procedures:** When noninvasive methods are not responsive, interventional procedures are planned. Following regional procedures are strongly recommended by various literatures:

- Stellate ganglion block (fig.6): For upper limb CRPS, stellate ganglion block with local anesthetic agent and corticosteroid is the treatment of choice. It is a day care procedure usually done under USG or fluoroscopy guidance. Stellate ganglion is located anterior to transverse process of C7 and neck of first rib. Patient is positioned supine with a thin pillow under neck. Head rotated slightly to the opposite side. On fluoroscopic technique, needle is directed to the junction of vertebral body and transverse process of C6 or C7 between trachea and carotid artery. After bony contact, needle is slightly withdrawn to rest

outside of longus coli muscle. Contrast agent is injected to confirm appropriate needle position and to rule out intravascular or neuraxial injection. After confirmation by both antero-posterior & lateral view, mixture of local anesthetic agent and corticosteroid is injected. Onset of Horner syndrome (Ptosis, miosis, anhidrosis) with increased temperature (>3F) of affected limb is usually observed in successful block. On USG guided technique, transducer is placed over C6 level. After retracting carotid artery laterally, needle is inserted paratracheally using an in-plane approach. Following a negative aspiration test for blood or CSF, local anesthetic agent and corticosteroid are injected to subfascial plane of prevertebral fascia.

- Lumbar sympathetic block (fig.7): Fluoroscopy or USG guided lumbar sympathetic ganglion block is recommended for lower limb CRPS. On fluoroscopic technique, patient is placed on prone position with a pillow under lower abdomen. After dressing & draping, needle is inserted towards antero-lateral side of L2 or L3 vertebral body. After confirmation with contrast agent, mixture of local anesthetic agent and corticosteroid is injected. On USG guided approach, patient is positioned on lateral decubitus with affected limb upwards. Needle is inserted below the lower pole of kidney towards antero-lateral aspect of L2 or L3 vertebral body. After repeated negative aspiration, local anesthetic & corticosteroid are injected on real time visualization. Patient is monitored for 2 hrs and may be discharged after 4 hrs.
- Radiofrequency ablation (RFA) of sympathetic ganglion: Both conventional and pulsed RFA are indicated for long term effect and in cases where corticosteroid is contraindicated.
- Bier block: Some studies suggest intravenous injection of local anesthesia and corticosteroid for reduction of pain in CRPS-1.

**Surgical procedures:**

Surgery is the treatment of choice in patients refractory to conservative therapy and interventional procedures. Spinal cord stimulation, percutaneous cervicothoracic or lumbar sympathectomy and

intrathecal pump of morphine are the effective surgical procedures for CRPS.

**PROGNOSIS:**

Prognosis of CRPS is highly variable. Better outcome is seen in younger persons, children and teenagers. For older people, good outcome may be noticed but some persons experience severe pain and disability despite treatment. Evidences suggest early treatment, particularly rehabilitation, is helpful in limiting disability.



Figure 1: Left upper limb CRPS following supracondylar fracture



Figure 2: X-ray of both hand (AP view) in left upper limb CRPS



Figure 3: Right lower limb CRPS



Figure 4: Three-phase bone scintigraphy in left upper limb CRPS



Figure 5: Mirror therapy



## Understanding Low Back Pain

### This is one of the commonest things we hear in our Chamber, So are you alone?

No, The occurrence of low back pain in India is quite alarming with nearly **60%** of the people in India have suffered from low back pain at some time during their lifespan.

And in worldwide data, it's **50% to 84%**.

### Why am I having this Pain?

Any pain is a Signal given by the Body to the Brain that something Somewhere is Wrong.

#### Take action.

Similarly, back pain is a signal of something wrong in the back and it may be as simple as just a Sprain which will heal on its own too as dangerous as **Cancer!**

### What are the Bad Back Pains that I should worry about most?

- Any Pain that Increases at Night and disturbs your sleep.
- Pain that Increases in the morning and Lasts Longer than 30 mins.
- Low Back Pain with gradually increasing weakness in either of the Limbs
- Low Back Pain after any serious trauma or accident
- There is a shooting pain in both or a single Leg.
- Back Pain with Pain in many other joints with or without swelling.
- Back pain with fever or weight loss or with chronic cough.
- Any pain that lasts more than a month should be Investigated.

So if any of these matches, **please consult a doctor** as soon as possible.

### What is the commonest cause of Back Pain?

Commonly it occurs due to sprain. Where due to improper posture or sudden movement the muscles or ligaments around your back tightens and get stiff to protect your spinal cord.

It generally heals on its own within a week.

### So What are the Other Causes of Back Pain?

- Arthritis. (**Spondylitis**)
- Degenerative Conditions related to age. (**Spondylosis**)
- Disc Related Problems. (**Disc Prolapse**)
- Facet Joint arthritis.
- Kidney Stones too present as Back Pain.
- Osteoporosis. ( Minerals decreased in your vertebra )
- Cancer or Metastasis (rare, but a possibility)

### And, are Spondylosis and Spondylitis Different things?

**Yes,** Not every Pain is Spondylosis/Spondylitis.

There are four terms, used by Doctors:

**Spondylosis:** It is generally seen in patients above 45years. It means your bones are degenerating and it's quite normal with age.

- **Spondylitis:** This is something more serious. Caused due to various Inflammatory conditions like arthritis.



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- **Spondylolysis:** This is fracture of a bone that connects two Vertebrae (your back bones)
- **Spondylolisthesis:** Here one of your vertebrae has slipped forward or backward with respect to your other vertebra.

Studies suggest almost 80% of People aged 45 and above have degenerative changes (spondylosis) but only 30% of them have Back Pain!! ( More common in Women).

Hence! Your Back Pain may not be caused just because of spondylosis !! **Get it Investigated.**

### Can bad posture cause Back Pain?

Yes, and this is growing at a very alarming rate! Long-standing bad posture like working in front of computer Screens, or driving for a Long duration may result in stress to a side of the back resulting in back pain.

This is quite simple to treat and never occurs if we maintain the correct posture.

### Why do I feel Numbness or Tingling sensation in one of my legs along with Back Pain?

Your Back has some important structures as follows:

- **Vertebra** or the backbones: They mainly take the load off your back and protect the most important structure called the Spinal cord.
- **Disc:** These are soft structures between the Vertebra that acts as a Cushion.

Now from the spinal cord, some nerves go down through a gap in Vertebra to your legs (It's just like mega electric wiring with the Main control center at the Brain).

Sometimes this Disc due to various causes bulges out and gives pressure on your Nerve causing the tingling sensation or Numbness. (Check out the video)

### So, Doctor what are the treatments?

To treat 1st, you need to know the exact cause of your pain. ( The Pain Generator)

That's why, your doctor will keep you asking questions regarding the origin of pain, duration of pain, the radiation of pain (like, any Loin to Groin pain may

mean a Kidney stone), and various other questions to pinpoint the diagnosis.

Sometimes certain blood tests, as well as X-rays, may be suggested to verify the diagnosis.

**MRI is" generally" not needed**, except if the diagnosis was not possible with Simple X-ray or your Doctor has planned some interventions.

( Never forget to bring any old X-rays, blood tests, or prescriptions you have).

### 1. Medicines:

- Pain killers with Muscle relaxants are the 1st line of Drugs that you may be prescribed. (Note: Pain killers if taken as advised don't cause kidney problems:))
- Some Nerve Medicines ( like Gabapentin) to relax the sensitized nerve which is caused by pressure due to your disc.
- Sometimes Calcium tablets are also given to improve bone strength.

### 2. Exercise:

Believe it or not, this is the best and one of the most effective ways to cure your back pain permanently.

But Exercises should only be performed after a proper diagnosis regarding the cause of the pain.

### 3. Modalities:

Yes, Electric Modalities like TENS and UST are effective but dangerous too if not given by properly trained Physiotherapists!!

### 4. Interventional Pain Management:

One of the latest methods to relieve your pain. Here under C-Arm or Ultrasonography Machine Doctor identifies the **exact place of Pain** and Injects medicine in that area to block the Pain Generator.

After block for 4-5 hours you may feel numbness over one of your legs. (Its quite Normal)

**5. Surgery:** The last solution to any Problem!! ( Look out for a separate blog Soon).

## Phantom Pain: What we need to know?

To understand phantom pain, let us start with a story of an unfortunate jute mill worker who lost his right hand in an accident while working in the factory, in an automated machine and he was severely injured. He rushed to the hospital, but the right hand was crushed in such a way that above elbow amputation of the right hand had too carried away. Surprisingly even after the amputation, he felt that his right arm is still present and it is twisted as before and he started to feel severe pain in that absent limb. The pain continued to increase, and it was so severe that he could not sleep at night. At the same time, another very distressing symptoms appeared whenever something or someone touches some particular parts of his body like right sided cheek, back, face etc. he used to feel severe pain in his absent hand. Even if little water slipped down to that part of the body, he used to feel as if someone was hitting him with a hammer on the amputated fingers of his non-existent right hand. None of his family members or relatives believed this ghostly hand and pain. This type of pain or sensation arising from the non-existent part of the body which is no longer present is called Phantom Limb Pain (PLP) or sensation.

In 1552, the French military surgeon Ambrose Pare first mentioned this type of pain, but in 1872, Mr. Mitchell coined the term 'phantom limb' for the first time.

**Incidence & Risk factors:** About 75% of amputees experience this type of pain or sensation in their lifetime. Women suffer from this type of pain more compared to men. Studies have shown that the prevalence of this type of pain is higher in those who have suffered from severe pain for a long time before amputation. Moreover, this non-physical phantom pain is also related to stress, anxiety, depression etc.

**Organs affected:** Phantom pain can occur after amputation of hands, feet, teeth, tongue, nose, breast, penis etc. Menstrual cramps after hysterectomy, bowel pain after resection of appendix, rectum, ulcer pain after partial gastrectomy also have been noticed.

**Onset & Duration:** In most cases phantom pain and



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sensation occurs within two weeks of the amputation and subsequently subsides. But in 50% of cases this pain continues for more than seven years and in many cases for a lifetime.

**Character of pain:** All the features of neuropathic pain may be present in PLP like tingling, electric shock like, shooting, stabbing or piercing, cramping, burning pain. Sensation of unnatural position or twisting of the limb may be there specially if it was present for a long period during pre-amputation period.

**Mechanism of phantom pain:** The researchers have been trying to solve the mystery of this ghostly pain for a long time. Although not fully explained, some theories have been postulated. They are as follows:

**Changes in Peripheral Nervous System:** After amputation, the cut-ends of nerve fibers grow to form small tumors called neuromas. Due to the increased activity of sodium channels in neuromas, spontaneous impulses are generated and pain sensations from the area continue to travel along the nerve fibers to the central nervous system. As a result, the person continues to feel pain without any painful



stimulus.

**Changes in Central Nervous System:** Changes in the central nervous system occur mainly at two levels, the spinal cord and the brain.

In the spinal cord, central sensitisation occurs with increased NMDA activity and windup phenomenon occurs. At Dorsal Root Ganglion (DRG), the  $\beta$  and c nerves that carry the pain to the brain are sprouted and arbitrarily connected to touch fibers and sympathetic fibers. As a result of this sprouting and sympathetic-somatic coupling, the slightest sense of touch produces a sensation of intense pain also known as allodynia and hyperalgesia. Normally some downward impulses from brain go along the descending nerve fibers of spinal cord to suppress the pain. During sensitisation, the descending inhibitory impulses are also weakened, resulting in more intense pain.

In the brain along with sensitisation there is cortical reorganisation. Each organ in our body has a specific area of representation in the brain, namely sensory homunculus at somatosensory cortex to receive the sensation and motor homunculus at motor cortex to conduct the movement of that organ. (Figure 1) Now when a limb is amputated, the cortical area representing the amputated extremity are taken over by neighboring representational zones. This change in the brain is called cortical reorganization. For example, if a person's hand is amputated, the part of the brain assigned to that hand is taken over by the part assigned to the cheek or back of that side. (Figure 2) Cortical reorganization has been proved by magneto encephalography, functional MRI and it has been shown that magnitude of phantom limb pain coincides with level of cortical reorganization.

**Neuro-matrix and neuro-signature theory:** According to Melzack's new neuromatrix and neurosignature theory, consciousness, sensation and emotion enter the 'neuromatrix' i.e., the network of nerve fibers, are processed and create 'neurosignature', which includes pain feelings, action plans, plans to take various measures to control stress. (Figure 3) When a limb is amputated, as no sensation from the missing limb is coming into the neuromatrix, abnormal neurosignatures are generated, resulting in absurdly increased pain perception.

**Theory of learned pain:** Because of injury or trauma to that limb before the amputation, there is a lot of pain while trying to move that limb. This relationship between movement and pain remains embedded in the brain as a memory and this cause changes in the brain. Even after the amputation, whenever the nerve fibers supplying the limb are stimulated, pain is felt due to prior memory without the actual presence of the limb.

**Psychological factors:** Anxiety, distress, fatigue etc also have a relation in producing PLP.

**Management:** Management of PLP is very difficult and often impossible to cure it completely. Although various treatment options mentioned below are available, none of them have been proven to be solely effective.

**Pharmacological options:** Medications used to relieve pain include paracetamol, non-steroidal anti-inflammatory drugs (ibuprofen, diclofenac), opioids (tramadol, buprenorphine), antidepressants (amitriptyline, nortriptyline, duloxetine), anticonvulsants (gabapentin, pregabalin), calcitonin, NMDA receptor antagonist (ketamine), desensitisation with intravenous lidocaine,  $\alpha$ -adrenergic blocker (clonidine, dexmedetomidine) etc. As Phantom limb pain are mostly neuropathic in nature, the use of NSAIDs should be limited for short period only.

**Physical therapies:** Various physical therapies have an important role in managing phantom limb pain. These are: Transcutaneous Electric Nerve Stimulation (TENS), Mirror therapy/ Virtual reality therapies, Accupuncture, Prosthesis training including myoelectric prosthesis etc. (Figure 4)

**Psychological therapies:** Many psychological therapies also have been tried to treat phantom limb pain like electromyographic biofeedback, temperature biofeedback, Cognitive behavioural therapy (CBT), Sensory discrimination training, Hypnosis etc.

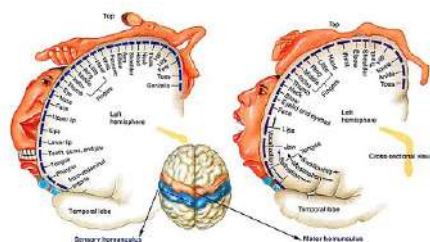
**Newer pain interventions:** Many novel pain interventions have been tried to treat PLP with mixed results. Those are nerve block, trigger point injection, BOTOX injection, Neurolysis or radiofrequency ablation of neuroma, epidural block, sympathetic block (stellate ganglion block, T2-T3 block or lumbar

sympathetic block), spinal cord stimulation, deep brain stimulation, dorsal column stimulation etc. (Figure 5)

Surgical options: Excision of neuroma, stump revision or further amputation may be done but with uncertain results.

Multimodal multidisciplinary treatment approach should be considered to treat this type of complex neuropathic pain conditions. The aim of treatment is to reduce such pain with the help of various medical methods and make the patient socially and economically productive and bring him back to life.

Legends:



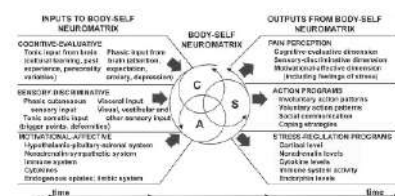
**Figure 1: Sensory and motor homunculus**

(Source: Internet)



**Figure 2: Cortical reorganisation**

(Source: Office file of ESI Institute of Pain Management)



**Figure 3: Factors that contribute to the patterns of activity generated by the body-self neuromatrix, which comprises sensory, affective, and cognitive neuromodules. The output patterns from the**

**neuromatrix produce the multiple dimensions of pain experience as well as concurrent homeostatic and behavioural responses.**

(Source: Melzack R. (2001). Pain and the neuromatrix in the brain. *Journal of dental education*, 65(12), 1378–1382.)



**Figure 4: Patient of phantom limb pain practicing Mirror Therapy**

(Source: Office file of ESI Institute of Pain Management)



**Figure 5: Various pain interventions:**

- A & E: Spinal Cord Stimulator,**
- B: Pulsed radiofrequency ablation of stellate ganglion,**
- C: Fluoroscopic dye spread of stellate ganglion blockade,**
- D: Fluoroscopic view of T2-T3 Radiofrequency ablation.**

## Physiatry Approach to Knee Pain

Knee problems are prevalent among individuals of all ages and can significantly impact daily life. Physiatrists play a crucial role in managing these issues, employing a range of strategies to alleviate pain, restore function, and improve the overall quality of life for the affected individuals.

A basic introduction of Knee problems through aetiological classification:

**Congenital** - Blount's Disease, Achondroplasia

**Developmental** - Deformities associated with lever arm dysfunction in Cerebral Palsy

**Acquired** -

**Traumatic** - Fracture & Dislocation, ligament injury, Meniscal Injury, Tendon injury, Muscle tears

**Infective** - Septic Arthritis, Bursitis

**Inflammatory** - Rheumatoid Arthritis, Peripheral Spondyloarthropathy, Crystal associated arthritis

**Metabolic** - Paget's disease of the bone, Hypothyroidism

**Degenerative** - Osteoarthritis

**Neoplastic** - Osteosarcoma

**Others** - Varicose veins

The way a physiatrist approaches a knee diagnosis is bifid, a medical diagnosis, and a functional diagnosis. The first helps stage, prognosticate, and plan medical management; the second tells about the specific wants and needs of the patient. The latter is often more instrumental in providing appropriate care to the patient in order to improve their activities of daily living and ultimately help them achieve their vocation. This is especially true since, more often than not, the anatomic localization of the locus of pathologic processes does not correlate with the level of functioning or the perceived need for such in the patient's everyday activities. Only a skilled physician like a physiatrist who is trained in such biomechanical and functional assessments can help the patient understand and navigate the vagaries of the disease and the team-based treatment process. This aids in a



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faster and better holistic recovery that improves their quality of life.

Let us now see a few glimpses of the most common knee problems seen by clinicians today and how we may approach them.

**Osteoarthritis:** It is one of the most common disorders, particularly in the elderly, that involves the gradual degeneration of all the components of the knee joint, including the cartilage, the bony architecture, the synovial membrane and fluid, the ligaments and meniscus, etc. It is either primary or secondary in nature following trauma involving the joint surface, etc. The diagnosis is based on either clinical, clinico-radiographic, or clinico-laboratory criteria. Often there is joint tenderness with crepitus and deformity (varus, valgus, or extension lag) without warmth. The pain is exacerbated by activity and relieved by rest. Activities such as climbing stairs, getting up from a sitting position, or stooping down are very painful and require much effort. It may be



associated with weakness of the quadriceps or hamstring muscles, obesity, or a sedentary lifestyle. In the Indian population in particular, where stooping down, cross-legged sitting, or doing an Asian squat for a prolonged period of time is a necessity, a thorough functional assessment helps narrow down the possible points of contention and abilities to be focused on. Weight-bearing X-rays are usually done to grade the disease. There are many different avenues of management available depending on the grade of the disease, such as pharmacological, non-pharmacological, interventional, and surgical approaches. A physiatrist primarily focuses on the control of pain, improvement of biomechanics, control of risk factors, improvement of ADLs, and overall reduction in disability by using one or all of these approaches in concordance.

Patellofemoral pain syndrome is characterized by pain around or behind the kneecap. Physiatrists address this problem by analyzing biomechanics and gait patterns to identify any contributing factors. It is usually the patellar maltracking that is the culprit, which may occur due to various causes such as abnormal joint surfaces, unequal forces due to muscle action, trauma or inflammation, etc. They then develop tailored exercise regimens to address muscle imbalances and improve tracking of the patella, along with comprehensive medical management. Through targeted physical therapy, patients can experience reduced pain and enhanced knee function. There may be a need to use orthotics temporarily.

Anterior cruciate ligament (ACL) & Posterior cruciate ligament (PCL) injuries are frequent among athletes and can lead to instability, reduced joint function, and the development of secondary osteoarthritis. Physiatrists focus on both pre-operative and post-operative care, providing education on injury prevention techniques and guiding patients through comprehensive rehabilitation programs. These programs involve progressive exercises to rebuild strength, balance, and proprioception. By gradually reintroducing functional activities, physiatrists help individuals regain confidence in their knee and minimize the risk of re-injury. The patient may require

the use of orthotics for a few weeks.

Furthermore, meniscus tears, which often result from sudden twisting movements, can cause pain and limited joint movement. Physiatrists employ a combination of rest, physical therapy, and sometimes PRP injections to manage the symptoms. They customize exercise plans to the individual's needs, gradually incorporating strengthening, flexibility, and balance exercises. These interventions promote healing, reduce pain, and prevent further damage.

In the realm of knee problems, tendinitis also poses a challenge. Commonly referred to as "jumper's knee," tendinitis involves inflammation of the patellar or quadriceps tendons. Physiatrists emphasize the importance of rest, correct footwear & training load, along with specific exercises to gradually load the tendon and stimulate healing. They closely monitor the progress and adjust the exercise regimen as needed, ensuring a gradual return to normal activities. There may be the application of orthotics or the use of physical and/or occupational therapy. PRP injections can be given for an optimum outlook. This may mean little to an elderly lady, but for an athlete, it may be a career-altering, devastating injury if not intervened in the right way. Therefore, for them, physiatrists work in close collaboration with the team coach, trainer, etc.

Physiatrists often collaborate with other medical disciplines, such as orthopedics, rheumatology, psychiatry, dermatology, internal medicine, general surgery, anaesthesiology etc., to ensure comprehensive holistic care. In cases where surgical intervention is necessary, physiatrists contribute to the pre-operative preparation and post-operative rehabilitation. They may also perform certain minimally invasive surgeries or percutaneous procedures. They tailor rehabilitation protocols based on the specific surgical procedure, aiming to optimize recovery and restore full function as soon as possible.

In pain management in particular, physiatrists may perform pain procedures like Genicular Nerve Blocks by Chemical Neurolysis or Radiofrequency Ablation

that help in ameliorating the pain and destroying the aberrant pain signaling fibers that had undergone peripheral sensitization, which ultimately leads to comprehensive pain relief and, in combination with holistic rehabilitation, may even delay or eliminate the need for corrective surgery. The various intraarticular injections that are often given, such as Platelet Rich Plasma, Bone Marrow Aspirate Concentrate, Viscosupplementation, Corticosteroid etc, are also another choice method of intervention in various cases. It is to be mentioned that, without the appropriate goal-directed physiatrist-envisioned rehabilitation plan, these expensive pain management procedures often fall short of their full potential if performed only in isolation.

In conclusion, knee problems are a common issue that can significantly impact an individual's quality of life. Physiatrists play a pivotal role in managing these problems through a multifaceted approach that includes medical management, exercise prescription, physical therapy, pain management & other interventional procedures, occupational therapy, orthotics & prosthetics, and patient education & counseling. By tailoring interventions to the unique needs of each patient, physiatrists help alleviate pain, restore function, and promote long-term joint health. Their holistic and patient-centered approach contributes to improved outcomes and enhanced well-being for individuals grappling with knee problems.

# Gabapin<sup>+</sup> NT

100  
200  
300  
400

Gabapentin 100/200/300/400 mg + Nortriptyline 10 mg Tablets

— Evidence, Experience, Excellence —

# BaclofOD

10  
20  
30

Baclofen extended release (GRS) 10/20/30 mg Tablets

**Backing Possibilities**



## Role of Algology (Pain Medicine) in Cancer Pain



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### Introduction:

Cancer pain is considered as the most important part of the sufferings in the cancer patients. According to the statistics 67% of symptoms are pain in the cancer survivors. According to ICMR(Indian Council of Medical Research) and NICPR(National Institute for Cancer Prevention and Research) The estimated number of incident cases of cancer in India for the year 2022 was found to be 14,61,427 (crude rate:100.4 per 100,000). In India, one in nine people are likely to develop cancer in his/her lifetime. The incidence of pain in advanced stages of cancer approaches 70%–80%. For those who survive, probably the most fearsome symptom regardless of cancer type is the pain. So pain management is very important part to treat the cancer patients. Suboptimal pain control can be very debilitating. Patients and their families tend to be under great distress after the diagnosis of cancer. Although many of these patients carry a very poor prognosis, prompt and effective pain control can prevent needless suffering, may significantly improve the quality of

their lives, and may potentially spare families the feeling of helplessness and despair. Although cancer can be a terminal disease, there should be no reason to deny a patient the opportunity to live productively and free of pain. Severe pain can interfere with physical rehabilitation, mobility, and proper nutrition. A significant number of cancer patients are subsequently diagnosed with depression. Therefore, the goals of pain control in any patient with cancer should be to optimize the patient's comfort and function while avoiding unnecessary adverse effects from medications<sup>1</sup>.

General consideration in cancer pain management:

Several practice guidelines exist for the treatment of cancer pain<sup>2,3</sup>. From these, probably the most widely used are the guidelines developed by the World Health Organization (WHO) 20 years ago, which include the 3-step “analgesic ladder” designed to facilitate and standardize pharmacologic cancer pain management and advise physicians worldwide how to better provide pain management to their patients .

According to the ladder algorithm, selection of nonopioid, opioid, and adjuvant analgesic therapy should be individualized, as directed by the intensity of the pain. This approach has been shown to provide good to satisfactory pain relief over a 10-year observation period in 88% of cancer patients in an over-2000-patient anesthesiology-based pain service<sup>4</sup>. On the other hand, it was estimated in 1994 that less than half of cancer patients in general practice get adequate relief of their pain, and 25% actually die in pain<sup>2</sup>. This is particularly disappointing because the pain endured by 90% of these patients could have been well managed with relatively simple interventions<sup>5</sup>. With ongoing progress in the pain management field, a number of palliative care specialists argue that the WHO program, even though updated in 1990, had not kept pace with the rapidly changing developments in oncology and pain research<sup>6</sup>. It was reported that the current ladder method consistently failed to provide sufficient relief



to 10%–20% of advanced cancer patients with pain, particularly in cases of neuropathic pain and pain associated with bone involvement<sup>7</sup>. Therefore, it was suggested that a fourth, “interventional”, step be added to the 3-step WHO analgesic ladder once opioids and other drugs fail, which will incorporate nerve blocks, intrathecal drug delivery systems, and other surgical interventions<sup>8</sup>. However, it may be reasonable to further adjust the WHO pain management ladder from its current approach to a more sophisticated 5-step algorithm that would separate potentially reversible neuromodulation (electrical or chemical) from virtually irreparable destructive procedures, such as cordotomy, rhizotomy, or thalamotomy, and would also include physical and psychological modalities at every step along the entire continuum of care (Figure 2).

### Figure 2: Modified analgesic ladder for the treatment of cancer pain.

Comprehensive pain assessment is one of the most important initial steps for successful management of cancer pain. To help introduce objectivity in the evaluation, a number of pain scales have been utilized to quantify pain intensity. Currently, it is recommended that pain should be measured using a numerical rating scales (from 0–10, where 0 indicating no pain and a 10 indicating the worst imaginable pain)<sup>9</sup>. In cases of children, the elderly, and patients with language differences, facial expression scales, ie, Wong-Baker scale, should be considered<sup>10</sup>. This enables clinicians to make a continuous objective assessment of pain intensity throughout the course of the treatment.

### Pharmacological management:

According to WHO cancer pain treatment ladder the initial step in any pain management is consisted of using nonopioid analgesics, which include acetaminophen, aspirin, NSAIDs, such as ibuprofen or ketorolac, and the most recent addition, the selective cyclooxygenase type 2 (COX-2) inhibitors, such as rofecoxib, celecoxib and valdecoxib.

The opioids are typically the most common drug class used in the treatment of cancer pain. They work by

binding to  $\mu$ -opioid receptors within the central nervous system, which are responsible for opioid-mediated analgesia, respiratory depression, sedation, physiological dependence, and tolerance<sup>11</sup>. Analgesic effect of opioids is largely dependent on  $\mu$ -receptor saturation and is thus influenced by the type and severity of the pain, prior exposure to opioids, and individual distribution of receptors<sup>5</sup>. There is no maximum dose for these agents; they are only limited by the development of side effects that are patient specific in their onset and severity. Common opioid side effects include nausea, constipation, sedation, and confusion, and they can be often managed without compromising pain control by adjusting the daily dose of the drug or in persistent cases by instituting additional medications, such as metoclopramide for nausea, laxatives for constipation etc.

It was suggested that for patients with mild to moderate cancer pain opioid analgesic therapy may start with the trial of codeine or hydrocodone<sup>12</sup>. *Codeine* is a weak opium alkaloid with a potency 1/10 of morphine. *Hydrocodone* is a more potent hydrogenated ketone derivative of codeine, which is typically available only as a combination product with acetaminophen or ibuprofen. Although both these drugs are very well suited for the treatment of different mild to moderate pain syndromes, they have almost no role in the treatment of severe chronic cancer pain. *Morphine* is considered the standard opiate and the drug of first choice in the treatment of moderate to severe cancer pain<sup>9,13</sup>. It should be titrated to maximum tolerability before moving on to another opiate such as fentanyl, hydromorphone, or oxycodone. Morphine, first identified nearly 200 years ago, is available in a variety of formulations (ie, parenteral, oral, rectal) and the oral form is available in a range of preparations, from immediate release to sustained release, allowing it to be precisely titrated to the patient's response. The most common adverse effects of morphine include sedation and some degree of cognitive impairment, which usually improves with time in patients taking stable and moderate doses of opioid<sup>14</sup>. Nausea and vomiting are frequently seen upon initiation of therapy and after large dose increases, but usually subside with time.

Constipation is seen with chronic therapy; patients do not develop tolerance to it and typically require preemptive treatment with laxatives.

The scenario of morphine use in India is quite low in spite of high production rate. A number of studies have reported opioid consumption at the country level. Global mean morphine consumption in 2013 was 6.27 mg/capita; per capita consumption in India was 0.11 mg, ranking 113 of 139 countries<sup>15</sup>. Barriers to opioid accessibility in India and other LMICs (Low and Low Middle Income countries) are known to be complex and multifactorial. In a recent overview of opioid access, Cleary et al<sup>16</sup> elegantly describe regulatory barriers in India that impede access to morphine, including requirements for physicians to receive special authority or license to prescribe opioids, requirements for duplicate prescriptions or special prescription forms, prescription limits of 30 days, inability to prescribe opioids in an emergency situation by fax or telephone, and pharmacists not having the authority to correct a prescription with a technical error. Compounding these structural barriers is the fact that even when opioids are included on hospital/clinic formulary, they are often not available. LeBaron et al<sup>17</sup> performed an in-depth study of barriers to cancer pain management at a large cancer hospital in South India. They found that, although morphine was more available at the study hospital than many other sites in India, access was limited to those patients seen by the palliative care service and that there were significant gaps in supply. The authors identified several key barriers, including: limited involvement of nurses in evaluating pain, lack of basic knowledge in pain control (ie, incorrectly identifying antiemetics or sedative medications as analgesics), misperceptions among staff that cancer pain was viewed as inevitable and largely unmanageable, and structural barriers (ie, patients were only given 1-month supply at a time, and family members would need to return to the clinic from far distances to obtain refills). In another overview of global barriers, Berterame et al<sup>18</sup> describe absence of training/awareness in medical professionals, fear of dependence, restricted financial resources, issues in sourcing, cultural attitudes, fear of diversion, international trade controls, and onerous regulation

as significant impediments to opioid accessibility. In their global overview, Cleary et al<sup>19</sup> describe the cornerstone trinity that is needed to improve opioid accessibility in LMICs: medication availability, education, and policy reform.

Although India has shown substantial progress in recent years, it is estimated that only < 1% of the population currently has access to palliative care services<sup>20</sup>. Important initiatives in India are currently needed to implement recent changes to the National Drugs and Psychotropic Substances Act by state governments. In the absence of a unified approach, NGOs (Non Governmental Organizations), which are already struggling with limited resources, will have to take on the onerous task of obtaining funds and personnel for catalyzing government action across 29 states and six union territories. From an educational perspective, the Medical Council of India and the Indian Nursing Council must incorporate palliative care into undergraduate curricula. Finally, although the National Program in Palliative Care was created in 2012, because of a lack of budget allocation only a tiny part of the program has been implemented.

There are several major groups of adjuvant analgesics (ie, antidepressants, antiepileptic drugs, muscle relaxants, corticosteroids, etc) that are used nowadays to intensify the effect of opioids and NSAIDs on long-term pain control. For example, pain that is neuropathic in nature is typically not amenable to standard opiate therapy, and the addition of tricyclic antidepressants (TCA) or/and antiepileptic drugs (AED) can offer a very effective treatment strategy in such patients<sup>21</sup>.

### **Interventional management:**

#### **A. Neuraxial Analgesia for Cancer Pain**

When systemic analgesics are exhausted, the selection of patients for neuraxial therapy (epidural and intrathecal routes) is often based on location and mechanism of pain—especially when considering the benefits of adding local anesthetics<sup>22,23</sup> or other adjuvants as clonidine, ketamine to opioids<sup>24,25</sup>. Patients with cancer-related pain and longer survival expectancy (>3 months) may benefit from neuraxial therapies using implantable systems as a permanent intrathecal catheter and subcutaneous pump, while

patients with shorter life expectancy may be treated with epidural therapy with implanted system as a catheter or port-a-catch connected to an external PCA pump<sup>26</sup>. The mechanism of neuraxial analgesia is based on opioid binding to its receptor in the spinal cord, which reduces or blocks the nociceptive signal conduction. Opioids may also interfere with descending pathways and modulate the pain pathway in the midbrain.

### **B. Minimally Invasive Procedures for Vertebral Pain: Vertebroplasty, Kyphoplasty, Radiofrequency Ablation, and Cryoablation**

Percutaneous vertebroplasty (PV), kyphoplasty (KP), radiofrequency ablation (RFA), and cryoablation (CA) are minimally invasive procedures indicated for the relief of vertebral bone pain in patients with metastatic lesions and/or compression fracture without neurologic sequelae. PV usually involves percutaneous injection of a cement, polymethylmethacrylate into the vertebral bodies, which can provide a mechanical stabilization of the lesion/compression fracture, increase bone strength and alleviate pain. KP is a variation of PV, which is performed by inflating a balloon in the vertebral body to make an empty space where the cement can be placed to correct vertebral height and kyphotic irregularities. In RFA, bone tumor or metastases are ablated using the heat generated from medium frequency alternating current. CA is an alternative to RFA in patients with metastatic bone disease and it is performed using cryoprobes, through which cooled, thermally conductive fluids are circulated. The area of tissue destruction created by this technique can be delimited more effectively by computed tomography than RFA. Contraindications for these invasive procedures are coagulopathy, neurological symptoms by vertebral compression or tumor encroachment on or within the spinal cord, complete collapse of the vertebra, presence of systemic or local infections, and certain types of lesions, such as osteoblastic metastasis<sup>27,28</sup>.

### **C. Sympathetic Blocks for Abdominal Cancer-Related Pain: Celiac Plexus Block and Superior Hypogastric**

#### **Plexus Block**

The celiac plexus originates from the sympathetic fibers of the splanchnic nerves raising from T5 to T12. It is the main target point where fibers to the upper abdominal area can be blocked by one injection. Splanchnic blocks may be an alternative to celiac block and may produce responses in those failing to respond to celiac blocks when the target area is invaded by the tumor<sup>29</sup>. Celiac plexus block (CPB) was claimed for the treatment of cancer-related pain originating from upper abdominal viscera, while the superior hypogastric plexus block (SHPB) is targeted for lower abdominal pain. These blocks interfere with neural conduction to abolish or reduce pain. Afferent and efferent<sup>30</sup> conduction may be disrupted by injection of local anesthetics. General contraindications for neurolytic blocks of sympathetic pathways include tumor invasion into the insertion site, coagulopathy, systemic or localized infection, complicated anatomy, and bowel obstruction<sup>31,32</sup>. Reported complications are back pain, orthostatic hypotension, diarrhea, retroperitoneal hematoma, bladder or ureteral injury, and inadvertent somatic nerve damage<sup>31,32</sup>. Different from neurolytic somatic blocks, CPB is claimed to be safe because neurological complications are unlikely and mostly transient when performed with CT guidance.

### **C. Peripheral Nerve Blocks: Paravertebral Blocks, Blocks in the Head Region, Plexus Blocks, and Intercostal Blocks**

A logical approach for pain otherwise difficult to treat is to block peripheral nerves with local anesthetics and thereby block the signaling of nociceptive input to the central nervous system. The selection of which nerve block to apply is dependent on the source of pain. The drugs used for nerve blocks are local anesthetics, which have to be applied continuously or intermittently because of a limited duration of action. Local anesthetic in use are lignocaine, bupivacaine, and ropivacaine etc. There may be a risk for nerve injury resulting in neuropathic pain but given that the procedure is performed by skilled personnel using adequate techniques, this risk is small. Moreover, peripheral block is not associated with risk such as meningitis, epidural abscesses or hematomas feared



by central blocks. Neurolytic peripheral blocks, on the other hand, will result in permanent disability if wrongly performed, and may—if correctly performed—after some time, result in neuropathic pain caused by reinnervation. Therefore, neurolytic blocks should not be the first-choice treatment. It should be used rarely and only in patients with expected short survival time (<3 months).

**Summary:**

The above discussion is mainly based on how the cancer patients with pain are managed in Indian scenario. There are other tertiary methods to treat intractable pain, like percutaneous chordotomy , spinal cord stimulator etc. Those are very restricted to some centers and are usually done by the neurosurgeons only after proper evaluation and considering the life expectancy of the cancer patients.

General approach to pain control should be individualized for every patient and will require knowledge of the cancer type, the drugs available on the market, the patients' metabolism, drug tolerances, and even their genetic morphology. Periodical re-evaluation of patient's medication regimen is essential to finely tune their analgesia and to minimize the exposure to potentially dangerous adverse effects. In addition, the approach must be interdisciplinary in nature: a surgeon, oncologist, pain specialist, pharmacist, psychologist, or physical therapist cannot treat the cancer pain alone; only by working together can these specialists give the cancer patient relief from the most fearsome symptom of their disease—their persistent pain.

**Inauguration of Your Health Publication - July 2023 Edition and participate in the Celebration of International Youth Day in association with IMA Bengal State Branch in the Auditorium of Pipal Tree Hotel on Saturday, 12 August 2023.**



## Ethics in Palliative Care

Palliative care is a philosophy of Care which enables a caregiver to think of a person suffering with life-limiting chronic disease as a human being first than just only a patient.

The goal of Palliative Care is to neither hasten nor delay the death of a person but to improve the Quality of Life of a person during the course of a life-limiting chronic disease through control of Pain & other controllable symptoms associated with the illness on the basis of four Ethical pillars consisting of

Beneficence

Non-Maleficence

Autonomy & Justice

which are omnipresent during taking any medical decisions & dispensing opioids.

Beneficence means that all medical practitioners have a moral duty to promote the course of action that they believe is in the best interests of the patient.

while

Non-maleficence is the obligation of a physician not to harm the patient to do No harm.

Let us take a situation for further introspection. It is often seen in Palliative care outpatients that cancer patients come with severe constipation after ingesting the combination drug of Tramadol+Paracetamol which they buy from any Medicine shop to control their unbearable pain at night.

In this scenario the best interest for sufferer is that the Constipation be relieved which itself will reduce the Pain while any drug which does not cause constipation like NSAID & Paracetamol be prescribed along with a H2 receptor antagonist thus practising the principle of Beneficence.

while

removing Tramadol (less strong Opioid) which was causing the constipation by enacting a vicious cycle of pain obligated the Physician in removing the harmful vicious distressing cycle thus practising the principle of Non-maleficence.

Autonomy means that a patient has the ultimate



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decision making responsibility for their own treatment because patients have the right to choose what happens to their body. A medical practitioner cannot impose treatment on a patient unless patient is deemed unable to make autonomous decisions.

While

Justice is the principle that when weighing up something; to think whether it's compatible with law, the patient's rights, and if it's fair and balanced to treat all people equally and equitably.

Let us take another situation for discussion. An unmarried female patient who recently lost her job due to fungating Ca breast; on Tramadol 200 mg/day & Lactulose syrup with moderate pain was admitted from emergency

She was prescribed Morphine 60mg/day because

Equivalent dose of 200mg of Tramadol is (200/5)ie40mg Morphine,so to control moderate pain half of her equivalent present dose(20mg) of Morphine ie(40/2) was increased along with cheaper & stimulant laxative Bisacodyl,antibiotics & referred to Hospice which she refused.

In this scenario Hospice care was preferred by the physician to incorporate palliative medicine & nursing care together to heal her physical wound while her psycho-socio-spiritual distress would have been tackled by a multi professional teamof psychologist, social worker & volunteer caregivers thus providing Holistic Care thus providing her fair & balanced mode of management hence emphasising the principle of Justice.

While

Since the patient decided against getting admitted in Hospice & preferred to stay in the Hospital, here her decision-making responsibility regarding what happens to her body was acknowledged by the Doctor thus practising the principle of Autonomy.

Following the above mentioned medical ethics & putting them in real life practise as elaborated earlier is the key in improving the Quality of Life thus providing optimum patient care in the field of Palliative Medicine





## Fibromyalgia and Generalized Pain Syndrome

Recently there is increased interest in chronic pain since this is now the most common reason for medical consultation in the general population and among the musculoskeletal disorders, non articular pain conditions are a major component. These can be regional like tendonitis, entrapment neuropathies, myofascial bands or generalised like fibromyalgia and chronic fatigue syndrome. These generalized pain syndromes are associated with widespread pain and significant disability and morbidity.

Fibromyalgia is a chronic pain syndrome of unknown etiology and it is characterised by hyperalgesia and allodynia and is often accompanied by fatigue, sleep disturbance, functional and cognitive impairment, depression and anxiety. This is not an autoimmune or inflammatory condition but is rather due to altered central afferent pain processing.

Fibromyalgia is not a new disease. The term 'fibromyalgia' was introduced in 1976 by hench (1976).

The estimated prevalence in the general population is 2%-5%, with a f:m ratio of 2:1. Fibromyalgia may present at any age. Certain psychological conditions like somatisation, having a mental disorder, presence of psychological distress, major depression, generalised anxiety, panic disorder and familial major mood disorder, are risk factors for developing fibromyalgia.

The most common presentation is 'pain all over their body', which is often describes as fluctuating from one area to another and varies from diffuse pain to more intense pain and sometimes sharp or electrical shock like. Pain is often made worse by exertion or physical activities. There is 'tenderness' and often elicited by light touch or pressure.

Fatigue affects most of the patients with fibromyalgia and is the most disabling symptom by many patients who describe it as feeling 'overwhelming tiredness' and 'completely washed out'.

Most patients have poor quality of sleep and do not feel 'refreshed' in the morning and some patients feel



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sleepy during daytime. Mood disturbance is common. Many patients have a history of depression or anxiety.

Patients with fibromyalgia often describe having a 'brain fog'—that is, cognitive impairment which includes problems with memory, an inability to focus on tasks, retain new information, do mental arithmetic, or solve problems.

Pain perception can malfunction owing to functional abnormality or pathology of the nervous system. One of the key features of maladaptive pain is increased sensitivity or hyper-responsiveness. Clinically this is often manifested as 'hyperalgesia' and/or 'allodynia'. Both hyperalgesia and allodynia result from peripheral and central sensitisation.

Abnormal levels of neurotransmitters have been reported in patients with fibromyalgia.

Hypothalamic–pituitary–adrenal (hpa) axis dysfunction has been demonstrated as part of the pathophysiology of patients with fibromyalgia. In patients with fibromyalgia, a reduced hpa axis response to stress has been demonstrated. There is

no assay or pathological test for fibromyalgia and diagnosis is based on symptoms and exclusion of other illnesses. The American College of Rheumatology (ACR) 1990 classification criteria are commonly used as a diagnostic tool. Recently, the ACR published survey based diagnostic criteria for fibromyalgia which include the presence of widespread pain for at least 3 months. However, tender point count has been replaced by a symptom checklist which includes the widespread pain index and symptom severity scale.

### Criteria

A patient satisfies the diagnostic criteria for FM if the following 3 conditions are met:

1. WPI  $\geq 7$  and SSS score  $\geq 5$  or WPI 3–6 and SSS score  $\geq 9$ .
2. Symptoms have been present at a similar level for at least 3 months.
3. The patient does not have a disorder that would otherwise explain the pain.

### Ascertainment

#### WPI:

Note the number of areas in which the patient has had pain over the past week (score will be between 0 and 19): left shoulder girdle, right shoulder girdle, left hip (buttock, trochanter), right hip (buttock, trochanter), left jaw, right jaw, upper back, lower back, left upper arm, right upper arm, left lower arm, right lower arm, left upper leg, right upper leg, left lower leg, right lower leg, neck, chest, abdomen.

#### SSS scale score:

1. Fatigue, waking unrefreshed, cognitive symptoms. For each of the 3 symptoms above, indicate the level of severity over the past week using the following scale: 0, no problem; 1, slight or mild problems, generally mild or intermittent; 2, moderate, considerable problems, often present or at a moderate level or both; 3, severe, pervasive, continuous, life-disturbing problems.
2. Considering somatic symptoms in general, indicate whether the patient has 0, no symptoms; 1, few symptoms; 2, a moderate number of symptoms; or 3, many symptoms.

The SSS score is the sum of the severity of the 3 symptoms (fatigue, waking unrefreshed, cognitive symptoms) plus the extent of somatic symptoms in general. The final SSS score is between 0 and 12.

FM, fibromyalgia syndrome; SSS, symptom severity scale; WPI, widespread pain index. Non-pharmacological

Aerobic exercise and strength training are beneficial for patients with fibromyalgia, and this is supported by systematic reviews

Cognitive behavioural therapy reduces pain and improved function in fibromyalgia. It may be particularly beneficial to provide CBT early after diagnosis to help patients understand fibromyalgia and learn how to develop more effective coping strategies.

Multicomponent therapy often involves both educational or psychological therapies and exercise. Systematic review and meta-analysis found that multicomponent therapy reduced pain and fatigue, although its effects were short-lived.

Meditative therapies included qigong, yoga, tai chi, or a combination of these therapies improves sleep and fatigue.

#### Pharmacological management

Low dose amitriptyline 25mg improves sleep, pain and fatigue but tolerance is poor, mainly due to the anticholinergic side effects, including dry mouth, and digestive and neuropsychiatric disturbances.

Tramadol is a useful, moderately potent, opioid analgesic that improves pain but not function in fibromyalgia. Dependence and abuse are also potential problems to bear in mind when prescribing.

Duloxetine (30–60mg) and milnacipran (12.5 – 50 mg) are serotonin-noradrenalin reuptake inhibitors (SNRIs), which should be considered for patients with fibromyalgia. Their tolerance is good (headaches and nausea are the most reported adverse events) and studies for milnacipran, duloxetine and venlafaxine have all reported positive effects on pain, function, pain threshold, fatigue, and quality of life.

Pregabalin (150–450 mg) significantly improves sleep, fatigue and pain.

Cyclobenzaprine (10–20 mg) is a muscle relaxant. A small systematic review showed improvement in sleep but not pain. Mild side-effects were common and included drowsiness, dizziness, dry mouth, constipation, nausea, and heartburn.



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