Basic Certificate in Palliative Care
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Week-07
Lecture 05: Neuropathic Pain and Its Management

Namaskar (Hindi word meaning greetings). This is Dr. Anurag Agrawal, a Pain Physician and Professor in Anesthesiology at Dr. Ram Manohar Lohia Institute of Medical Sciences, Lucknow, Uttar Pradesh, Bharat, India.

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Today we are going to talk about Neuropathic Pain and its management.

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I have done my MBBS and MD Anaesthesiology and PDCC in pain medicine from Banaras Hindu University.

I have a special interest in the interventional management of chronic pain and spine and spine endoscopy. I am a Vice President of NAPCAIM UP chapter. I am the Founder President of Endoscopic Spine and Interventional Pain Society of India. I am member of Pain Medicine Board of National Board of Examinations for Medical Sciences, India and I am a member of Cancer Aid Society Ethics Committee. I am working currently as Pain Physician and Professor at Dr. Ram Manohar Lohia Institute of Medical Sciences, Lucknow.

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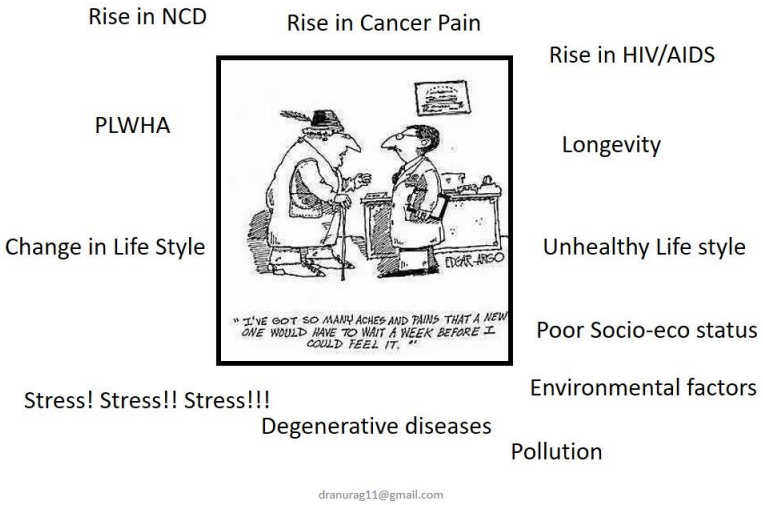

So, why we need to talk about the Neuropathic Pain? Because there is a rise in the NCD across the world that is non communicable diseases. There is rise in the cancer pain, there is rise in different chronic conditions like the HIV and AIDS. There is rise in the age of living of the population.

It is reaching up to 80 years and beyond that in most part of the developed and developing world and there is changes in the lifestyle. Unhealthy lifestyles are increasing. We are eating more in the outside. We are going away from the healthy lifestyles which our elders used to have. Then there is poor socionomic status, there are environmental factors and degenerative conditions which are increasing and moreover stress, stress and stress in each and every population group.

So, all these things are causing neuropathic pain. So, most of the patient come to our pain medicine OPD that I have got so many aches and pain that a new one would have to wait a week before I could feel it. So, that is the condition unfortunately and this is a big challenge. Chronic pain itself is going to be the biggest burden on the coming world and the government of the day across the globe are thinking and are forced to think about the treatment of chronic pain. We as a pain physician as you know that pain medicine is upcoming super specialty of anesthesiology where we are having different courses, but we are still unable to meet the demand and supply chain.

Demand is much more pain physicians are required to serve the society, but we are producing less. So, we urge the government to take care into this direction also.

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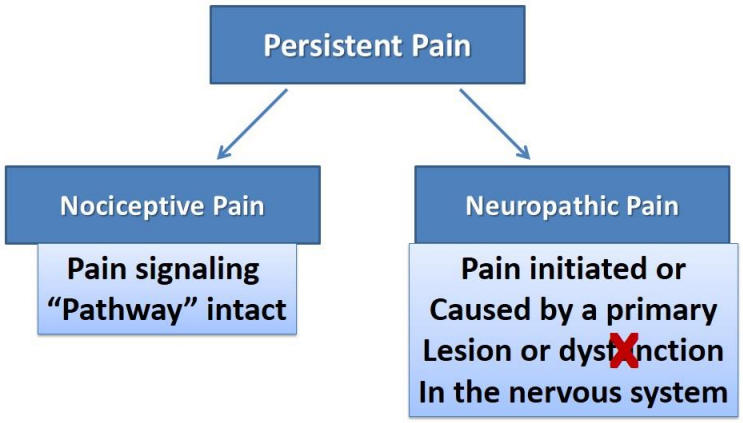

So, what is the coming back to the topic there can be two type of pain which is nociceptive pain and then there is a neuropathic pain. So, nociceptive pain signals that pain signaling pathway are intact. Whenever you get your head bump on something you get a pain and that means that body is able to perceive the injury and to signal it as a pain that means the network is good and clean, but neuropathic pain means that there is some problem in the network and what is that nerve they are nerves they can be peripheral nerves they can be central nervous system.

So, neuropathic pain is which is the pain initiated or caused by a primary lesion or dysfunction of the nervous system.

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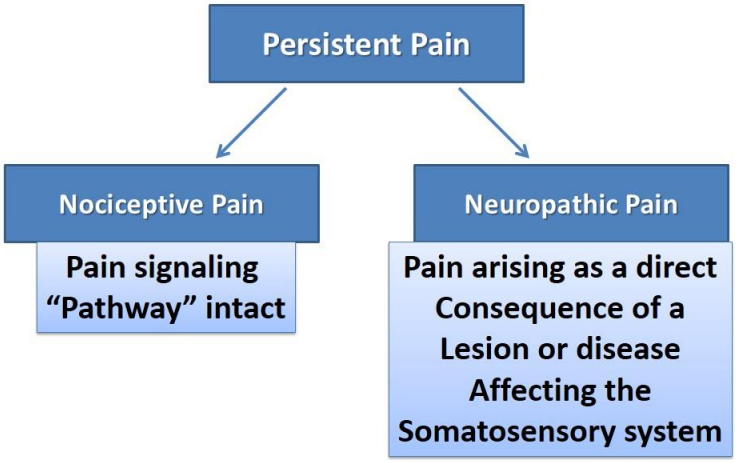

Treede R D et al. Neurology 2008:70(18):1630-1635

Then neuropathic pain also is a direct consequence of the lesion or a disease like the cancer or like the chemotherapy or like any other lung disease like the herpes, diabetes they all can cause dysfunction of the connecting system that is the nerves.

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Difference between Nociceptive & Neuropathic Pain

Nociceptive Pain	Neuropathic Pain
Stimulation of peripheral nerve fibers by noxious stimuli e.g. Thermal, Chemical	Damage / disease of any part of nervous system
Sharp, Dull, Continuous	Burning, Tingling, electrical, stabbing, Pins and Needles
e.g. Abscess, Trauma	e.g. Phantom Limb Pain, Herpes Zoster, Diabetic Neuropathy
Somatic & Visceral	Peripheral & Central
Responds to NSaIDS, Opioids and Rx of cause	Does not respond to NSaIDS, Opioids. Responds to TCAs & ACDs
Most of the Acute Pain	Most of the Chronic Pain
Psychological Impact	Psychosomatic Disorders

So, what is the difference between the nociceptive pain and neuropathic pain? Nociceptive pain means that there is a stimulation of peripheral nerve fibers why nociceptic stimuli. Suppose you have some injury you have some disease and then your

body senses that something is wrong you put your finger in near the flame. So, the nerve sensation nerve ending near the finger they sense that something is wrong it gives the signal to the brain and brain ask the body to withdraw your finger from the fire.

So, that is the nociceptive pain which means that body sensing that there is some nociceptive stimuli which can be thermal, chemical, sharp or dull continuous and the examples are the abscess like the trauma like the post operative pain. And these type of pain they usually respond to the over the counter available drugs like the NSAIDs ibuprofen, diclofenac, sodium and others and they also respond to the opioid and other of the treatment. And most of the acute pain which happen due to some trauma due to some injury they are type of nociceptive pain. But what about the neuropathic pain they are due to the damage or disease of any part of nervous system and the symptoms are usually burning, tingling, electrical shock like pain like it happens in the trigeminal neuralgia, stabbing and pinch and needle. Patient will tell you I am feeling tingling all over my body or half of my body or in my arm or in my leg.

So, that is type of neuropathic pain and the causes can be phantom limb pain herpes zoster. After herpes many patients suffer from the severe kind of neuropathic pain. Diabetes it causes peripheral axonopathy and severe pins and needle sensation in the lower limbs especially. Say this neuropathic pain unfortunately do not respond to the commonly available analgesic drugs like the NSAIDs and opioids, but they do respond to the adjuvant drugs which I told you earlier in my another lecture. These are the drugs which were meant and discovered for some other purposes, but they were found later on to work on certain aspects of pain especially the neuropathic pain. And the most common examples are the tricyclic antidepressant and the anti-convergent drugs like the gabapentin and the peregrine. And most of the chronic pain they do have a component of neuropathic pain also.

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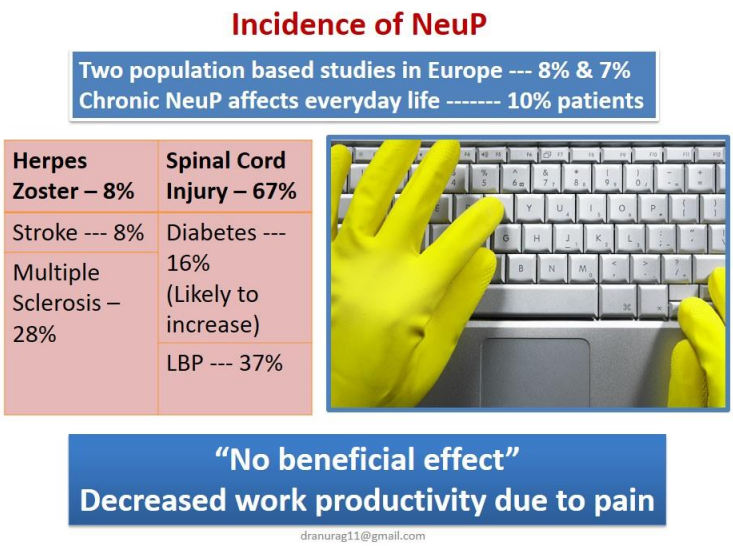

So, what is the incidence of neuropathic pain? So, there are multiple studies across the world in Europe they found that the incidence and prevalence in their society is 8 percent and 7 percent. And 10 percent of those patient they told the investigators that we are getting affected by this neuropathic pain in our day to day life. That means, our life is being disturbed by this kind of pain. So, herpes zoster causes up to 8 percent patients of herpes zoster they suffer from the severe kind of chronic pain.

Then comes the spinal cord injury which is again the incidence is increasing because of the increased road traffic accident across the globe where up to 70 percent 67 percent patient they suffer from the neuropathic pain. Then stroke can cause it, diabetes can causes multiple sclerosis and the one of the most common condition of chronic pain across the world that is low back pain. It also causes the neuropathic pain which goes down the leg with that severe tingling, numbness, burning, pinced and needle sensation. And this pain does not help like acute pain actually helps you to take care of your body to remove the body from the acute event or in noxious event, but here neuropathic pain is not serving any benefit to the body.

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Causes of NeuP

- Trigeminal neuralgia
- Post-herpetic neuralgia (pain following shingles)
- Diabetic neuropathy
- Phantom limb pain following an amputation
- Multiple sclerosis
- Pain following chemotherapy
- HIV infection
- Alcoholism
- Cancer
- Atypical facial pain
- Various nerve disorders

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So, causes of common causes of neuropathic pain are one and most trigeminal neuralgia also known as suicide disease unfortunately where the patients are having severe electric shock like pain on their face.

Then comes the postherpetic neuralgia where I told you that 10 to 20 percent patients suffer from the postherpetic neuralgia, diabetes, neuropathy, phantom limb pain, multiple sclerosis, pain after the chemotherapy that is being used for the cancer patients. Then HIV infection, alcohol, cancer, atypical facial pain and multiple other causes are there which can cause neuropathic pain.

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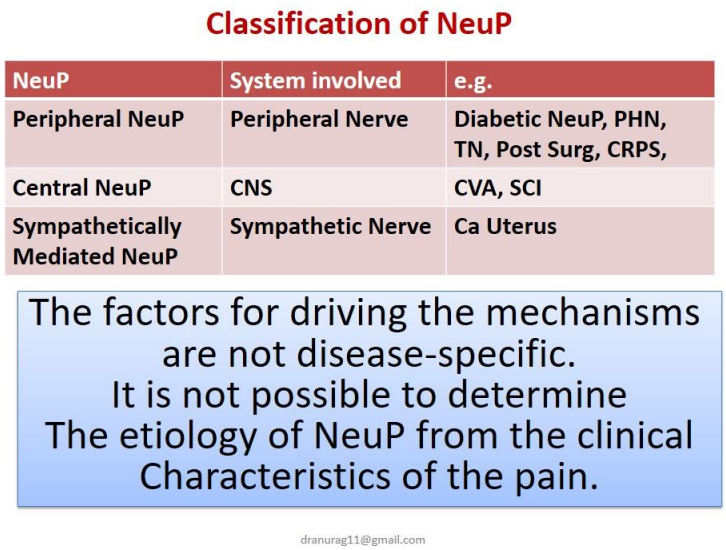

So, to how can we classify it? So, it can be classified as the part of nervous system which is being affected like the peripheral neuropathic pain which involves the peripheral nerves and the examples are diabetic neuropathic pain, postherpatic neuralgia, trigeminal neuralgia, post-surgical pain or the CRPS. And then it can be central neuropathic pain where the central nervous system is being involved which can be there after the stroke, cerebrovascular accident that is known commonly known as stroke or spinal cord injury. And then comes on sympathetically mediated neuropathic pain where the sympathetic nerves are involved is usually happens with the common type of cancer carcinoma uterus, carcinoma gallbladder, pancreas where the nearby nerves get affected or the pancose tumor in the carcinoma lung cases where it involves the brachial plexus and cause severe kind of sympathetically mediated pain which is also known as CRPS that is complex regional pain syndrome.

So, many times it is not possible to determine the etiology of neuropathic pain from the patient's perspective. So, you need to treat the wholesome patient thinking of the neuropathic pain also.

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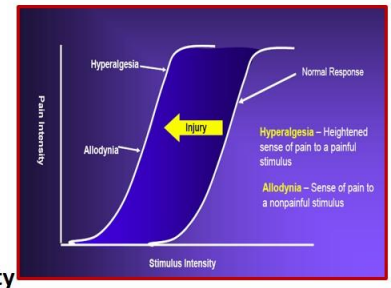
Neuropathic pain: Pathophysiology

Multiple mechanisms

- Local nerve injuries
- Sympathetic-related pain
- Cytokines in neuropathic pain
- Na^{++} channels in injured axons
- Central sensitization & plasticity
- Central inhibitory pathway deficiency
- Ca^{++} channels in injured nerve endings



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So, the pathophysiologies are multiple mechanism are proposed where there can be local nerve injuries, there can be sympathetic related pain and there can be release of cytokines at the different body part which causes the activation of sodium channels in the injured axons and then there are phenomena known as central sensitization and plasticity and then calcium channels also get involved. So, there can be multiple things which can happen where there can be allodynia then that means, when patient perceives a normal touch as a painful touch like here you touch and patient says that I am having pain. Then there can be hyperalgesia when the patient perceives too much of pain for less noxious stimuli.

I pinch the hair. So, I am feeling it mildly, but patient of with hyperalgesia may feel is a severe kind of pain. So, that is known as hyperalgesia.

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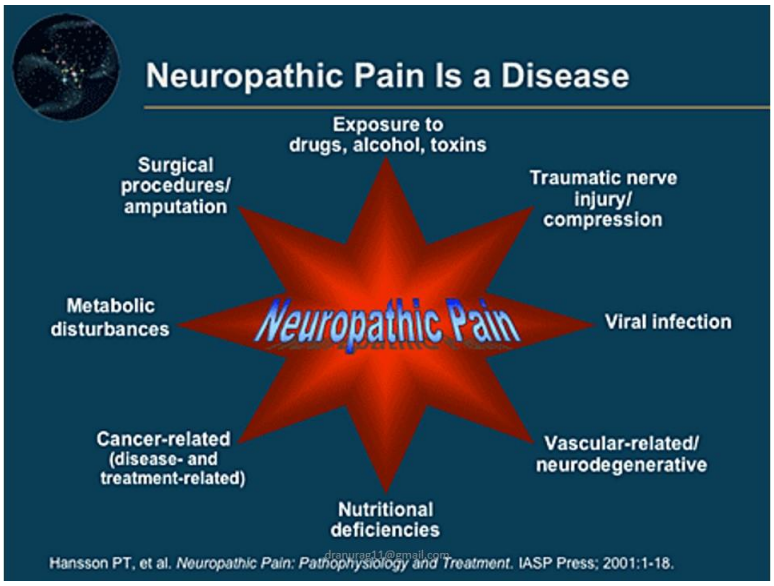

So, it is considered to be a disease neuropathic pain itself is a disease now because it can happen due to exposure of drugs alcohol and toxins, it can be because of trauma, it can be because of viral infection, it can be neuro generative like multiple sclerosis, it can be because of the vitamin B12 deficiencies, nutritional deficiencies, cancer can causes metabolic disorder like diabetes can causes and surgical process like amputation. Phantom limb pain where the patient has lost his arm, but patient is still feeling that I am having this arm intact and that is severely painful when in reality there is no arm. So, that is known as phantom limb pain very difficult condition to treat, but when you get a good pain physician to treat it you get good results.

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Common features suggestive of NeuP

SYMPTOM	SENSATION
Paresthesia	An abnormal sensation, spontaneous or evoked
Dysesthesia	An unpleasant sensation, spontaneous or evoked
Hypoesthesia	Decreased sensitivity to stimulation (Tactile or thermal; both are frequent)
Hyperesthesia	Increased sensitivity to stimulation (Tactile or thermal; both are rare)
Hypoalgesia	Diminished pain response to a normally painful stimulus
Hyperalgesia	An increased response to a stimulus that is normally painful
Allodynia	Pain due to a stimulus that does not normally activate the Nociceptive system

So, common features which are suggestive of neuropathic pain are paresthesia that means then abnormal sensation is spontaneous or evoke. So, when you touch the patient here and you touch the patient here and suppose this arm is having neuropathic pain. So, patient says I am feeling bad when you touch, here I am feeling normal, here I am feeling bad. Then dysaesthesia when you feel bad sensation by touching or spontaneously, then there is hypoesthesia when you feel less that is hypo and when you feel more it become hyperaesthesia, increase sensitivity I am having the normal sensation, but I am feeling too much then there is hypoesthesia. When you it happens with the diabetes patient when they lose the sensitivity to the pain especially in the lower limbs.

So, in results small prick, small trauma to their lower limb they do not appreciate it and then it gets bad and they get non-healing ulcers even. Then there is hyperaesthesia and then there is allodynia which we have talked when you feel the non-painful stimulus as a painful one.

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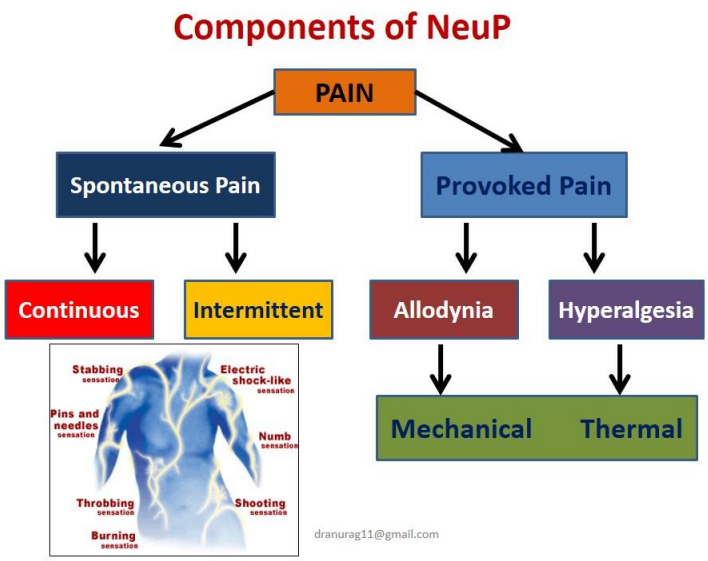

So, components of neuropathic pain is a pain which can be spontaneous which can be provoked. So, when this spontaneous it can be continuous or it can be intermittent. When intermittent like it happens the trigeminal urology patients are having sudden severe electric shock like pain on their face in one or more territory of trigeminal nerve which is the fifth cranial nerve and patient may have it spontaneously, they can have it when they eat, they chew, they brush, they speak anytime. So, all these sensations can and then it can be provoked which it can be allodynia or hyperaesthesia.

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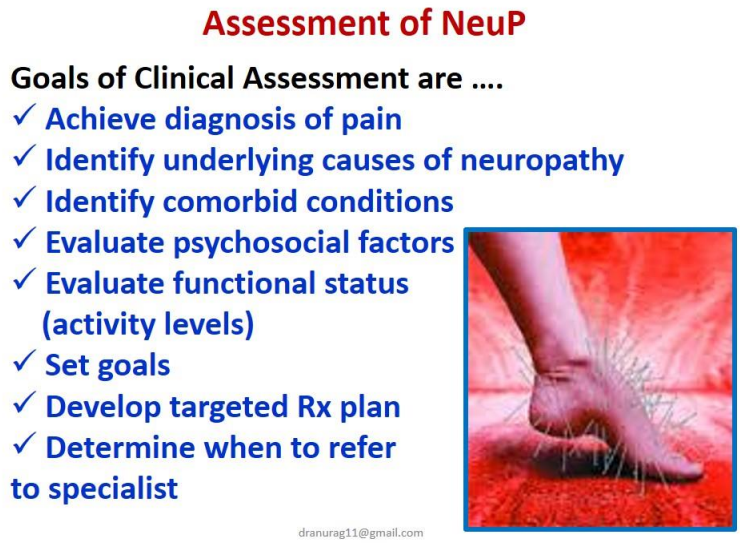

So, to assess the neuropathic pain the goals are to achieve a diagnosis of pain, to identify the underlying causes of neuropathy if possible, to identify the comorbid condition like the diabetes or herpes, to evaluate the psychosocial factors that how much this pain is actually affecting the patient's life, to evaluate the functional status whether the patient is able or not able to work because of pain and then to set goals. Please remember it is very very important to understand many times especially in allopathy it is difficult to cure the disease for the chronic pain problems, chronic problems be it diabetes, be it heart disease, be it kidney disease, be it chronic pain. So, it is very important to set the goals with the patient that look I am not perhaps able to cure your condition, but I am certainly able to help you out to manage it. So, that you can have a good quality of life, develop a targeted treatment plan and please remember as I told you pain medicine is a super specialty of anesthesiology which deals exclusively with chronic pain problems.

So, we are trained to do that. So, if you as a primary care physicians you find that your treatment algorithm is unfortunately not working you should refer your patient to a pain physicians available near to you.

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Screening Tools for NeuP

Symptoms	LANSS	DN4	NPQ	DETECT	ID Pain
Pricking, tingling, pins & needles	X	X	X	X	X
Electric shocks or shooting	X	X	X	X	X
Hot or burning	X	X	X	X	X
Numbness		X	X	X	X
Pain evoked by light touch	X		X	X	X
Painful cold or freezing pain		X	X		
Clinical Examinations					
Brush Allodynia	X	X			
Raised pinprick threshold	X	X			

Modified from Bennett et al, PAIN 2007

So, what are the screening tools? There are multiple scores have been made you can check the Google for the details that the DN4 score, NPQ score, detect score and lanss score, multiple. So, there are multiple questionnaires, but the shortcoming with all most of these questionnaires are that they have been developed overseas in the Europe or in America and many time the questions they have are slightly sensitive or perhaps not suitable for our population. So, we are working on that as a society, professional society to develop our own indigenous pain scores.

So, that we can be they can be effectively used in our patients. So, then you can do the some clinical examination to check the allodynia where you use a brush to stroke the different part of body and to see whether the patient is having pain or not and pin prick threshold etcetera.

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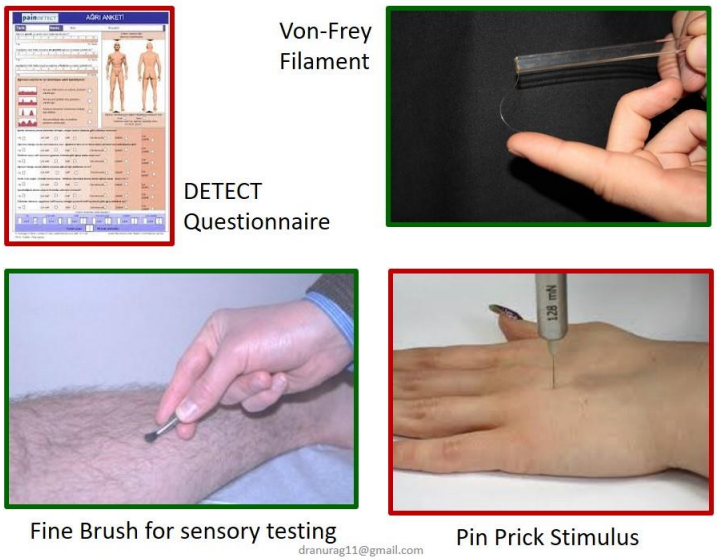

Then the again multiple test which you should know that a specialist do it Von-Frey filament test detect questionnaire, fine brush you can see to see the allodynia, pin prick to see the hypo or hyperalgesia.

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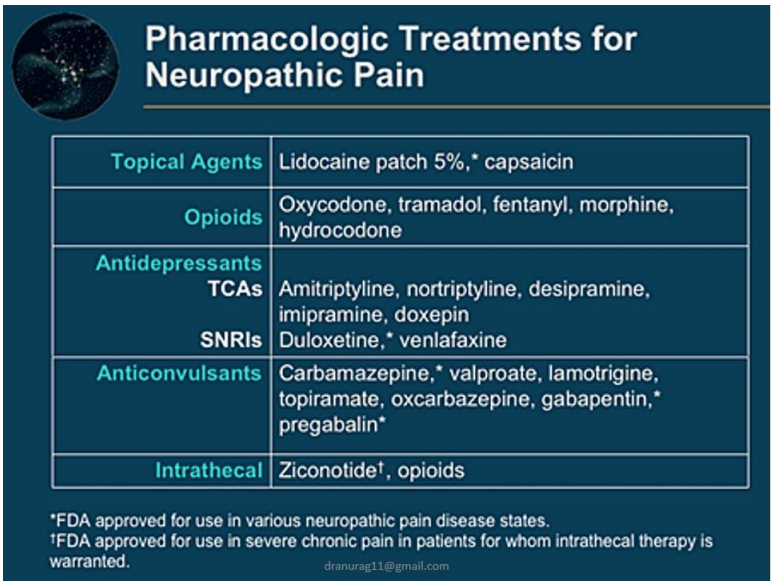

So, what are the treatments of the neuropathic pain? So, they starts with the again oral or topical treatment because they are easily available easily applicable and they are cost effective. So, there can be Lidocaine patch or capsaicin patch.

Capsaicin patch is still not available in India, but lidocaine patch is available in India. Then there are opioids like the tramadol, fentanyl, morphine and then the most important drugs for treatment of neuropathic pains are these two classes of drug, antidepressants drugs and anticonvulsant drugs. So, they are TCA tricyclic anti-depressant and then there are SNRI. So, examples are amitriptyline, nortriptyline and then there are duloxetine, venlafaxine they are available and they are very effective. And then carbamazepine is the drug of choice for the trigeminal neuralgia, sodium valproate, lamotrigine, oxcarbazepine, gabapentin, pregabalin. All these drugs are being used by a pain physician to treat different kind of chronic pain syndromes and they have to be used one by one as per the patient condition.

Then there are advanced therapies like the intrathecal therapy where we use a intrathecal pump to supply the medicine to directly to the spinal cord where it works beautifully in certain set of patient. Here opioid drugs like morphine as well as some other drug Alpha-2 agonists like the clonidine are being used in India. Zicotenide is very costly and not available in India it is only available in US currently.

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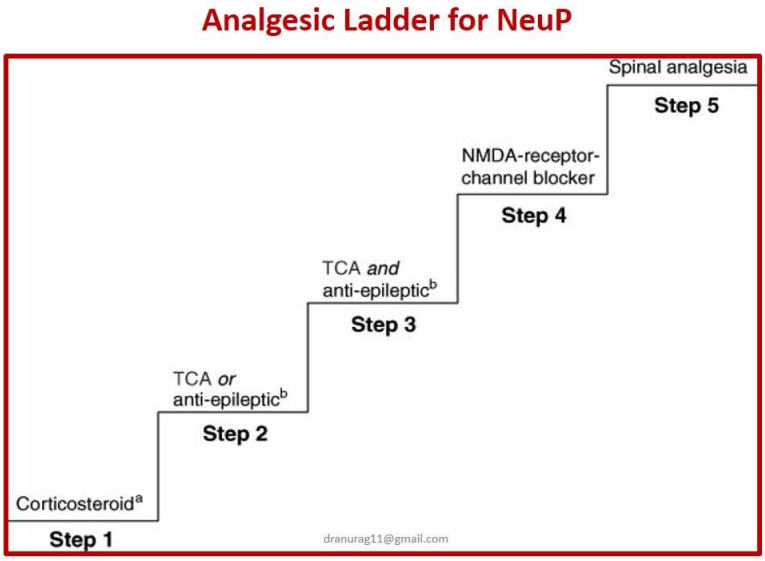

So, analgesic ladder you start with the Corticosteroid drug then you go to the TCA or anti-epileptic and then you use a combination of both the drugs then NMDA receptor blocker like the ketamine infusion or dextromethorphan oral tablet or a spinal analgesia where use the intrathecal pump. So, this is the analgesic ladder for the neuropathic pain suggested by some authorities like the WHO ladder is there for treatment of otherwise chronic pain.

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Titration of medication dose in NeuP

Drug	Initial Dose	Titration	Max Dose	Duration for adequate titration
TCA	10 – 25 mg HS	10 – 25 mg/day every 3-7 days	75 – 150 mg/day drug level 100ng/ml	6-8 wks, 1-2 wks at max dose
Valproate	200 mg HS	200 mg/day every 2–4 days	1200 mg	4 to 6 wks
Gabapentin	100–300 mgHS or TDS	100-300 mg TDS every 1-7 days	3600 mg/day or 1200 mg TDS	3-8 wks, 1-2 wks at Max dose
5% Lidocaine patch	Max 3patches daily 12 hrly	none	same	2 weeks
Opioids	5-15 mg 4hrly	Convert to SR after 1-2 wks	Evaluate if > 120-180mg/day	4-6 wks
Tramadol	50mg twice/day	50-100mg/day every 3-7 days	400 mg /day	4 weeks

So, titration of medication is very important in the treatment of neuropathic pain because remember none of these drugs are going to effect overnight and they are having their own set of side effects. So, it is very important that you titrate the dose of single drug till you reach the maximum tolerable drug to the patient before you jump to the other drug. So, it is, it takes time it usually takes few weeks to months to realize the full potential of a single drug. So, for the tricyclic anti represent like amitriptyline you start with the 10 milligram dose at HS at night because it causes lot of sleepiness to the patient and then you every week 3 to 7 day you increase it up to the 75 to 150 milligram per day and duration for adequate titration requires 6 to 8 weeks that becomes 2 months before you jump to the other drugs. So, are the seen with other cases like the gabapentin you start with 100 to 300 milligram at night then you increase it every 7th day then it goes up to the 36 milligram per day and same is the opioid and tramadol and everything.

So, titration is the key of successful treatment.

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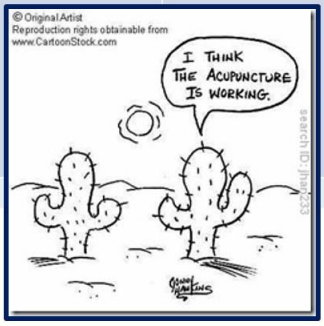
Drugs used for Rx of NeuP

Antidepressants (TCA)	Antidepressants (SNRI)	Anticonvulsants	Miscellaneous
Amitriptyline Clomipramine Desipramine Imipramine	Desvenlafaxine Duloxetine Milnacipran Venlafaxine	Carbamazepine Divalproex sodium Gabapentin Lacosamide Lamotrigine Oxcarbazepine Phenytoin Pregabalin Sodium valproate Topiramate Valproic acid	Cannabinoids NMDAR antagonists Opioids Topical Agents Others



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So, these are the examples of amitriptyline, desipramine, TCA then anti depression, duloxetine, venlafaxine, anticonvulsant, carbamazepine, phenytoin, oxcarbazepine and then there are multiple other drugs NMDAR receptor antagonists, opioid, topical agent and others.

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Drug treatment for NeuP

Salicylales
Paracetamol
NSAIDs
SSRI
antidepressants
Benzodiazepines
Neuroleptics

(-)

TCA
SNRI antidepressants
Alphas delta agonists
(Pregaba & Goba)
Topical Lidoraine
Opioids/ Tramadol

(+)

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So, the drug treatment goes in favor of TCA SNRI alpha delta agonist pregaba and gabapentin topical lidocaine. Then the commonly available NSAIDs and opioids for the neuropathic pain.

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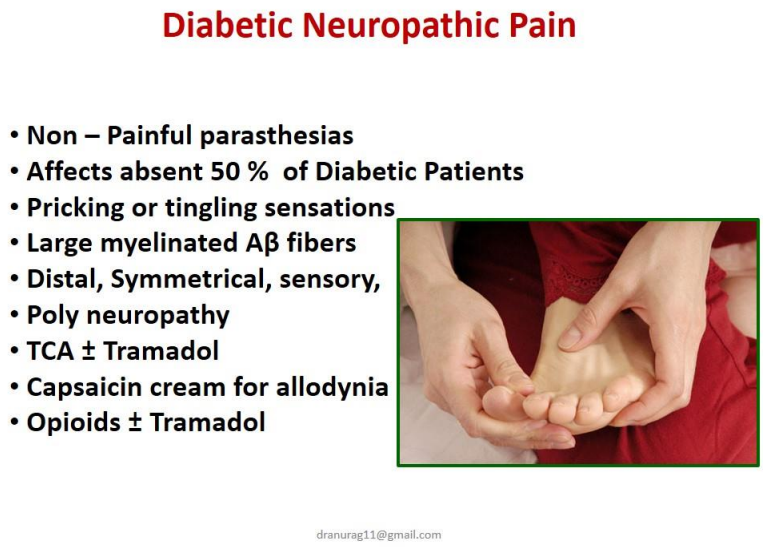

So, to talk about some specific conditions diabetic neuropathic pain that is a non painful parasthesias. So, I just I told you in diabetes the peripheral axonopathy happens peripheral diabetic neuropathy is the name scientific name where the patient have hypoalgesia or hyposthesia in the periphery of the lower limbs especially.

It affects about 50 percent of diabetic patient where they feel pricking or taking a sensation and the affected fibers are A beta fibers of the nervous system. And this is distal, symmetrical, and sensory neuropathy and they respond usually to tricyclic anti depression with or without trimodal.

Central Neuropathic Pain

- Stroke, SCI
- Burning in 50 % Patients
- 60 % develops pain within 3 months
- Altered sensation
- Carbamazepine, gabapentin & Pregabalin
- Lamotrigine has a role
- TAC, Amitryptiline & Nortriptiline & Fluoxentine are not effective

Same cames the central neuropathic pain like it happens with stroke and spinal cord injury up to 50 percent patient complain of the burning sensation and they develop pain within 3 months of the incident of a stroke or injury and there is ultra sensation they also respond to the carbamazepine, gabapentin, pregabalin and the combination of drug you need to use.

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CRPS Neuropathic Pain

- Presence of an initiating noxious event eg- Trauma
- Or cause of immobilization
- CRPS – Type I – without obvious Nerve injures
- CRPS Type II – with obvious Nerve injures
- Continuing Pain, allodynia or hyperalgesia
- Oedema, Skin changes or motor symptoms
- Temp Difference – due to Autonomic disturbances
- Drugs, PT, Steroids,
- N Block, Neuromodulations
- Prevention, early reference

Then CRPS as I told you is a initial noxious event is there like trauma or there is immobilization because of any cause. Suppose you have a wrist fracture and you were put in a cast or plaster for 3 weeks or 6 weeks and during that immobilized period you develop a CRPS type 1 or type 2 injury.

Where there is a continuous pain, allodynia and hyperalgesia there are edema, skin changes or motor symptom their temperature differences are there. So, there are multiple drugs physiotherapy steroids are being used in the initial period. Then later on stellate ganglion MIPSI that is the minimally invasive pain and spine intervention is being done by the pain physician trained pain physicians to relieve the patients of their symptom.

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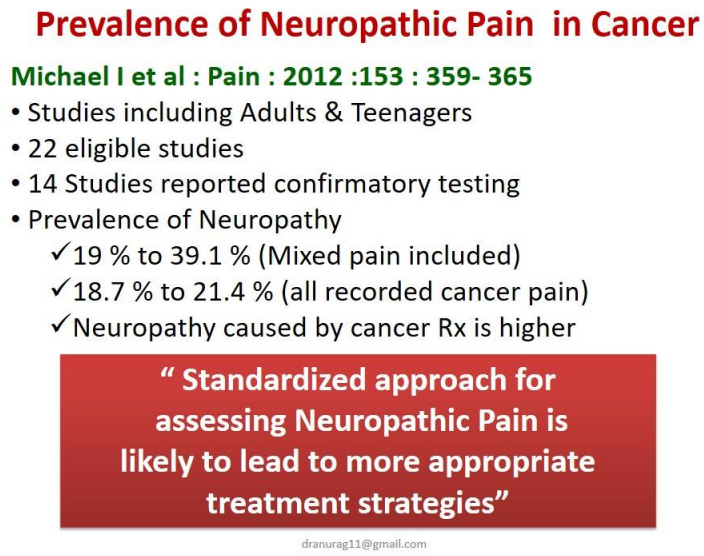

So, in cancer patients the prevalence of neuropathic pain is again very high up to 19 to 40 percent up to 20 percent in different study and neuropathic caused by cancer treatment is much higher than the disease that is the unfortunate part. So, all our treatment they also carry some or other sort of side effects. So, we always need to check the risk and benefit ratio before prescribing any treatment to our patients.

So, standardized approach for assessing neuropathic pain is likely to lead to a more appropriate treatment strategy.

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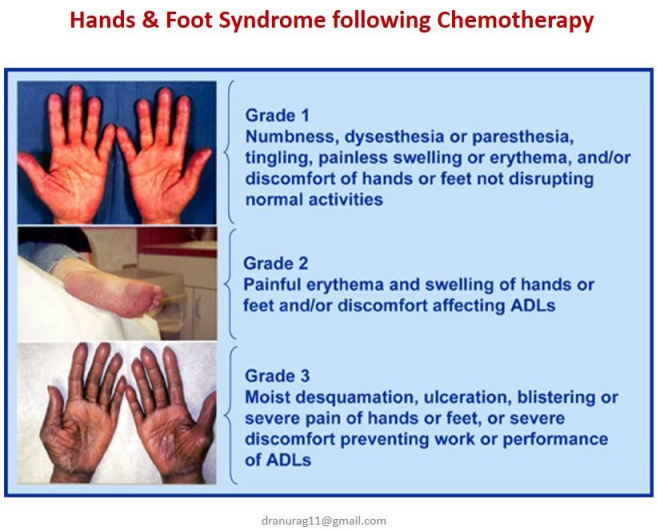

So, here you can see that this is a hand and foot syndrome following a chemotherapy grade 1 where there is numbness, dysesthesia, paresthesia, tingling, painless swelling, erythema or discomfort of hand then grade 2 painful erythema and swelling of the hand and feet then grade 3 moist desquamation skin starts peeling off, ulceration, blistering, severe pain of hands and feet and severe discomfort.

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Likely Causes of Cancer Neuropathic pain

- **Predominantly acute pain**
  - Painful peripheral neuropathy due to chemotherapy
  - Acute radiation – induced plexopathy
- **Predominately chronic pain**
  - Direct tumour infiltration of a peripheral Nerve
  - Tumour infiltration of a nerve plexus
  - Radiculopathy
  - Painful Peripheral neuropathy
  - Post-surgical pain syndromes
  - Post radiation pain syndromes

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So, likely causes of cancer neuropathic pain are predominantly acute pain happens in the painful peripheral neuropathy due to chemotherapy and radiation can also causes plexopathy and predominantly chronic neuropathic pain direct tumor infiltration of peripheral nerve like it happens the pain cause tumor due to lung cancer. Tumor infiltration of the nerve plexus, radiculopathy, painful peripheral neuropathy, post surgical pain syndrome and post radiation pain syndrome.

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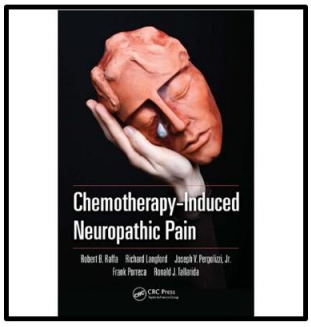
Identifying cancer neuropathic pain

- Any pain in a cancer patient is persistent or severe
- Any pain is particularly intense or distressing in quality
- Any pain does not respond to standard approaches
- The known anatomical location of disease suggests a neuropathic component or

Pain from nerve compression or injury is likely

- Other Co- morbid conditions



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So, identify cancer neuropathic pain that by any pain in a cancer patient is persistent or severe. The pain which is particularly intense or distressing in quality if the pain is not responding to the standard approach and like there is a spinal cord compression because of the tumor. So, you can feel that it is a chronic neuropathic pain.

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So, how to use the opioid analgesic in the cancer neuropathic pain? You need to optimize the opioid regimen. Titrate upward until effect or interleavable side effects are coming. Maximally manage side effects to allow for the further titration if possible and if unacceptable side effects without adequate analgesic effect. Consider adjuvant analgesic or switching to the alternate opioid.

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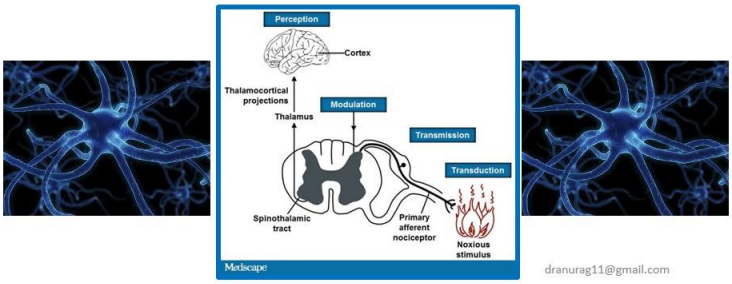
Neuropathic Pain in Cancer Patient – Our Experience

- Post-Surgical – RND, MND , MRM , Amputation
- Tumor Infiltration – PNET, Ca Lung, Ca H & N
- Chemotherapy – Peripheral Neuropathy, Intrathecal CT
- Nerve entrapment – Vertebral Mets
- Radiation induced – Mucositis, Burning in throat
- Sympathetic plexus – pelvic pain in gynaec Ca



So, our experience is multiple all kind of neuropathic pain can be seen in the cancer patients it can happen in the abdominal pain because of the tumor or cancer of gallbladder which is very prevalent in this part of country carcinoma pancreas, carcinoma urinary bladder or cervix in females.

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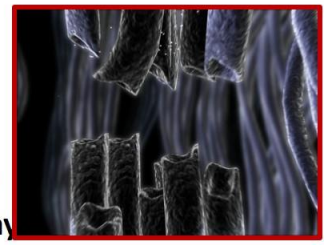
Treatment of Cancer NeuP at our institute

- ✓ WHO Analgesic Ladder
- ✓ Opioids (80 to 91%)
- ✓ Steroids
- ✓ TCA – 25 to 75 mg Hs (19 to 46% patients)
- ✓ Pregabalin 150-300 mg/day
- ✓ Gabapentin 100 - 600mg/day
- ✓ Ketamine 20mg / 5ml
- ✓ Duzola 20 – 30 mg bd
- ✓ Nerve Blocks - SHPB



It can be due to the chemotherapy which results in the peripheral neuropathy intrathecal CT and we use WHO ladder to treat this patient opioids in most of the patient because

pain is usually of multifactorial it is having neuropathic component, it is having nociceptic component visceral as well as somatic. So, we need to give steroids, opioids, tricyclic antidepressant and other drugs like I told you pregabalin, gabapentin, ketamine in different patient. Every patient you need to optimize and the treatment.

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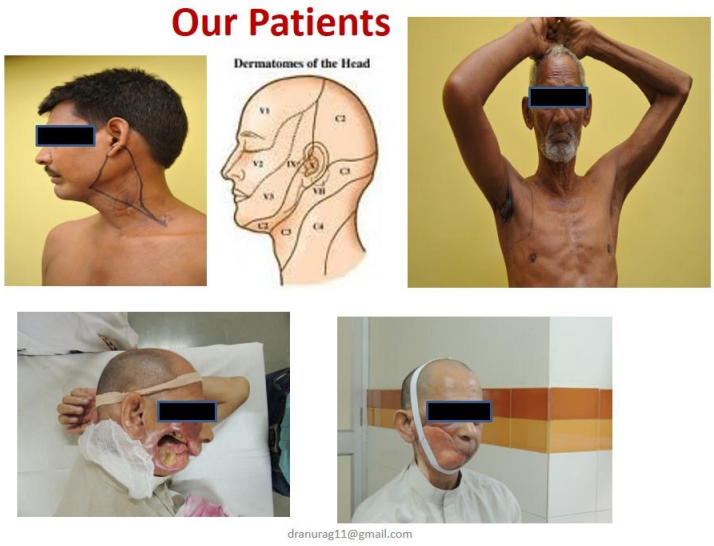

So, these are few cases where you can see that this is the post radiation loss patient and this is the operated patient.

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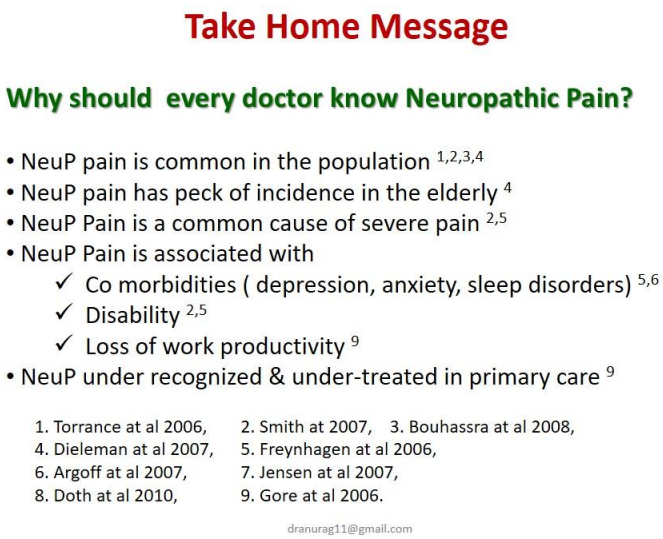

So, the take home message is that every doctor should know that there is a entity known as neuropathic pain which is very common and in elderly as group the incidence is more and it is a common cause of severe pain and it is can be associated with multiple comorbidities like depression, anxiety, sleep disorders, disability, loss of work productivity and you need to treat it and when you cannot treat it please refer the patient to the pain physician available near to you.

So, freedom of neuropathic pain is everybody is right and I have my pain free India Dr. Anurag Agrawal named YouTube channel as well as a Facebook page where we are trying to increase the awareness about the availability of pain medicine services in our country and I am also very much willing to help any of you to come and see our setup at Dr. Ram Manohar Lohia Institute of Medical Sciences, Uttar Pradesh, Bharat to see how we treat our chronic pain patient syndromes.

So, apart from that there are two societies of chronic pain in India. That is Indian society for a study of pain as well as Indian society of pain clinicians. So, you can visit their website to find about the latest guidelines, treatment options available and about the MIPSIs that is the minimally invasive pain and spine intervention for all kind of chronic pain syndrome started from the trigeminal neuralgia to neuropathic pain to low back pain to prolapsed intervertebral disc to joint pain to arthritis to arthralgias to neurological conditions to spasticity and all these chronic pain problems. Apart from that at Dr. Ram

Manohar Lohia Institute if you are from the anesthesiology background interested in pain medicine you are welcome to appear for the multiple DM pain medicine courses, FNB pain medicine courses as well as PDCC courses that is post doctoral certificate course of one year duration at multiple institutes including our own Dr. Ram Manohar Lohia Institute of Medical Sciences, Lucknow, Uttar Pradesh, Bharat.

Apart from that you can also come for an observership of 1, 2, 3 months to our institute if you are interested to see the working of pain medicine team at our institute. So, thank you and I wish you all the luck in your life. Thank you.