

# **Pain Module**

## **Section 2 Treatment Pharmacologic–Adjuvants**

# Adjuvant Analgesics

- An adjuvant analgesic is a medication that is not primarily designed to control pain, but can be used for this purpose.
- Examples of adjuvant analgesics:
  - Antidepressants
  - Anticonvulsants
  - Corticosteroids
  - Antiarrhythmics
  - Topical analgesics
  - Misc others e.g., baclofen, clonidine, bisphosphonates, calcitonin, anticholinergics, octreotide, muscle relaxants, radiopharmaceuticals.

# Antidepressants

- Pain signals travel up the spinal cord to reach the brain via the ascending system and can be altered/modulated by norepinephrine and serotonin in the descending spinal system.
- Antidepressants increase or maintain these chemicals in the spinal cord that reduce pain signals.
- Tricyclics, the older classes of antidepressants, seem to have better pain relieving capabilities than the newer ones that only increase serotonin e.g., selective serotonin reuptake inhibitors (SSRIs).

Tricyclic antidepressants are the most effective type of antidepressant used for pain. They include:

- Amitriptyline (Elavil)
- Imipramine (Tofranil)
- Clomipramine (Anafranil)
- Nortriptyline (Pamelor)
- Desipramine (Norpramin)
- But they don't work immediately. It may take several weeks to see an effect.

Antidepressants can be helpful for certain types of pain caused by:

- Arthritis
- Nerve damage from shingles (postherpetic neuralgia)
- Tension headache
- Migraine
- Low back pain
- Pelvic pain
- Diabetic neuropathy
- Chemotherapy induced peripheral neuropathy
- Phantom limb pain
- Fibromyalgia
- Stump / neuroma pain
- Irritable Bowel Syndrome
- Central pain (following stroke)
- Rheumatoid arthritis
- Sympathetic dystrophy (CRPS / RSD)
- Neuropathic pain

# Antidepressant Side-Effects

- The most common side effects of antidepressants are drowsiness, constipation, dry mouth, urinary retention, weight gain, and blurred vision. Some people experience nightmares or an increased heart rate.
- In older patients with decreased cognitive abilities, the use of a tricyclic antidepressant can lead to significant confusion. Patients with Alzheimer's disease should not be started on TCAs.
- Patients with cardiovascular disease (CVD) should avoid the use of tricyclic antidepressants or be followed closely by a physician for cardiac abnormalities that can worsen with their use.
- While some people experience minimal side effects, for others the side effects can be as bad as the pain. Different antidepressants have different side effects.
- Antidepressants have significant implications for drug-drug interactions when used in conjunction with many other medications . For example, patients who take triptans for migraines, or tramadol for pain, together with an antidepressant are at risk for a dangerous chemical imbalance, "serotonin syndrome", caused by taking two or more drugs that affect serotonin levels.
- Nortriptyline (Pamelor) and desipramine (Norpramin) reportedly have fewer side-effects than does Amitriptyline (Elavil).

# Anticonvulsants

- Anticonvulsants work by decreasing the hyper-excitability of nerves; therefore decreasing how easily pain signals are transmitted.
- They're helpful in disorders that have overly-excited nerves--"nerve pain," which is called *neuropathic* pain.
- Some examples of FDA-approved anticonvulsants for pain:
  - Lyrica in diabetic neuropathy and fibromyalgia
  - Neurontin in shingles (post-herpetic neuralgia)
  - Tegretol in trigeminal neuralgia
- Examples of anticonvulsants:
  - carbamazepine (Tegretol )
  - gabapentin (Neurontin )
  - oxcarbazepine (Trileptal )
  - pregabalin (Lyrica)
  - topiramate (Topamax)
  - pregabalin (Lyrica)
  - Clonazepam (Klonopin)
  - Lamotrigine (Lamictal)
  - Tiagabine (Gabitril)
  - Zonisamide (Zonegran)
- Possible Side-Effects
  - sedation (which can be helpful for sleep)
  - edema
  - weight gain
  - cognitive interference
  - 1st generation anticonvulsants can have more serious side effects, including blood counts

Anticonvulsants should not be stopped quickly, as this, though rare, can cause seizures.

# Anti-arrhythmics

- Anti-arrhythmics that are used for chronic pain are mexiletine (Mexitil<sup>®</sup>) and flecainide (Tambocor<sup>TM</sup>). They reduce pain in diabetic neuropathy, post stroke pain, complex regional pain syndrome (CRPS) or reflex sympathetic dystrophy (RSD), and traumatic nerve injury.

# Muscle Relaxants

- Muscle relaxants have limited efficacy in chronic pain but may be used to treat acute flare-ups. There are no studies to support the long-term use of muscle relaxants, especially for low back pain.
- Many drugs have been marketed as muscle relaxants, although many do not seem to have any direct effect on muscle. These drugs typically are sedating and have some serious side-effects.
- **Examples:** Carisoprodol (Soma), Cyclobenzaprine (Flexeril, Amrix), Methocarbamol (Robaxin), Baclofen (Lioresal)

# Adjuvant Analgesics for Cancer Pain

- Bone pain
  - bisphosphonates (eg, pamidronate, clodronate), calcitonin, radiopharmaceuticals (eg, Sr<sup>89</sup>, Sm<sup>153</sup>)
- Bowel obstruction pain
  - anticholinergics, octreotide



# Further Reading

- Pasero, C & McCaffery, M. *Pain Assessment and Pharmacologic Management*. Mosby, St. Louis, MO, 2011.
  - This excellent, #1 resource for nurses, provides comprehensive information about pain assessment and management.