Tramadol

Tramadol (marketed as Ultram, and as generics) is an opioid analgesic pain medication used to treat moderate to moderately severe pain.

When taken as an immediate-release oral formulation, the onset of pain relief usually occurs within about an hour.

It has two different mechanisms. First, it binds to the μ-opioid receptor. Second, it inhibits the reuptake of serotonin and norepinephrine.

Is stronger than codeine and enhances serotonergic and adrenergic pathways as well as having an opioid effect.

Meptazinol is a centrally-acting opioid used for moderate pain, with both agonist and antagonist effects on opioid receptors. It causes less respiratory depression but caution is still warranted in anyone with a reduced respiratory drive.

It is commonly prescribed to manage various types of pain, including post-operative pain, chronic pain, and pain associated with injuries or medical conditions.

Here are some key points about tramadol:

Mechanism of Action: Tramadol works by binding to opioid receptors in the brain and spinal cord, which helps to block pain signals and reduce the perception of pain.

Dual Action: In addition to its opioid activity, tramadol also inhibits the reuptake of certain neurotransmitters, such as serotonin and norepinephrine. This dual mechanism of action sets it apart from other traditional opioids.

Prescription Drug: Tramadol is a prescription medication and should only be taken under the guidance of a qualified healthcare professional. It is available in various formulations, including immediate-release and extended-release tablets and capsules.

Caution with Other Medications: Tramadol can interact with other medications, especially those that also affect serotonin levels, such as certain antidepressants. These interactions can lead to a potentially dangerous condition called serotonin syndrome.

Risk of Dependence and Withdrawal: Like other opioids, tramadol carries a risk of dependence and withdrawal symptoms if used for prolonged periods or at high doses. Abruptly stopping tramadol after prolonged use can lead to withdrawal symptoms such as anxiety, sweating, insomnia, and gastrointestinal issues.

Abuse Potential: Tramadol's dual mechanism of action has led to concerns about its potential for abuse and addiction, especially when used recreationally or in higher-than-prescribed doses.

Pregnancy and Breastfeeding: Tramadol use during pregnancy may pose risks to the fetus, and it is generally not recommended during breastfeeding due to the potential for passing into breast milk.

Medical Conditions: Tramadol should be used with caution in individuals with a history of seizures, respiratory problems, liver or kidney disease, or a tendency toward substance abuse.

Potential Side Effects

Adverse effects are probably comparable to codeine or dihydrocodeine.

Common side effects of tramadol may include nausea, dizziness, constipation, headache, and drowsiness. Some individuals may experience more serious side effects, such as respiratory depression or allergic reactions, but these are less common.

Tramadol has been reported to cause hyponatremia but the evidence is conflicting. The risk of hyponatremia resulting from combination oral tramadol/acetaminophen (TA) therapy is thus unknown.

Tramadol in Neurosurgery

- Regional anesthesia in colorectal laparoscopy: a retrospective comparison of quadratus lumborum and TAP blocks
- Effects of serratus posterior superior intercostal plane block on postoperative analgesia in patients undergoing breast cancer surgery: a randomized controlled trial
- The effect of bilateral rectus sheath and oblique subcostal transversus abdominis plane blocks on mechanical power in patients undergoing laparoscopic cholecystectomy surgery: a randomized controlled trial
- Effects of rhomboid intercostal nerve, serratus anterior plane, and paravertebral block on the quality of recovery after breast cancer surgery: a randomized controlled clinical trial
- Comparing postoperative pain control after modified radical mastectomy: a pilot study of ultrasound guided erector spinae plane block vs intraoperative tramadol administration in oncology patients
- Effect of erector spinae plane block and transversus abdominis plane block on quality of recovery and postoperative pain after laparoscopic hysterectomy; randomized, double-blinded clinical trial
- Clinical application of nerve block in early analgesia after anterior cruciate ligament reconstruction
- Ultrasound guided proximal adductor canal and pes anserinus blocks improve early recovery after arthroscopic ACL reconstruction

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A study examined whether, compared with acetaminophen (AA), TA use is associated with an increased risk of hyponatremia.

Hospital data compatible with the Observational Medical Outcomes Partnership-Common Data Model (OMOP-CDM; version 5.3) for 30,999 patients taking TA or AA from 2011 through 2020 were analyzed. New-onset hyponatremia was defined as a serum sodium level < 135 mEq/L within 10 days after drug initiation. The incidence rate ratio was calculated based on crude and 1:1 propensity-score-matched

models. Subgroup analyses compared patients taking TA extended-release (TA-ER) and TA immediate-release (TA-IR) formulations.

Among the 30,999 patients, 12,122 (39.1%) were aged > 65 years and 16,654 (53.7%) were male. Hyponatremia within 10 days developed in 1613 (8.4%) of the 19,149 patients in the TA group; the incidence rate was higher than in the AA group (4.2%; 493 out of 11,850 cases). In the propensity-score-matched model, the incidence rate of hyponatremia in the TA group was 6.8 per 1000 person-days (PD), which was 1.57-fold (1.31, 1.89) higher than that in the AA group (4.3 per 1000 PD). In both the crude and propensity-score-matched models, the incidence rate of hyponatremia was significantly higher in the TA-ER than TA-IR subgroup.

In this real-world study, hyponatremia was more frequently observed in the TA than AA group, and in the TA-ER than TA-IR subgroup. Therefore, it is imperative to prescribe tramadol cautiously and closely monitor electrolyte levels [1)]

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Lee YJ, Kim J, Han Y, Hwang K, Choi B, Oh TR, Kim IY, Rhee H. Risk of Hyponatremia after Tramadol/Acetaminophen Single-Pill Combination Therapy: A Real-World Study Based on the OMOP-CDM Database. Drugs R D. 2023 Jul 28. doi: 10.1007/s40268-023-00436-4. Epub ahead of print. PMID: 37507616.