Tolperisone

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Tolperisone, a centrally acting muscle relaxant agent, which has been in therapeutic use for more than three decades, has been widely used as spasmolytics of choice. It is recently launched drug in India for acute and chronic back pain and spasticity of neurological origin.

Tolperisone is an aryl alkyl β-aminoketone having an asymmetric carbon atom α to the carbonyl group. It has higher muscle relaxant activity than the dextrorotatory enantiomer. It exhibits membrane stabilizing potency, which is characteristic of anti arrythmic and local anesthetic agents.

Tolperisone differs from other myotonolytic agents in its pharmacological properties, which mediate muscle relaxation without concomitant sedation[1] or withdrawal phenomena.

Mechanism of action

Being, centrally acting muscle relaxant, tolperisone acts at the level of spinal cord by blocking sodium channels and calcium channels. Tolperisone exerts its spinal reflex inhibitory action predominantly via a pre synaptic inhibition of the transmitter release from the primary afferent endings via a combined action on voltage-gated sodium and calcium channels.[2]

Tolperisone increases the blood supply to skeletal muscles; this action is noteworthy since a muscle contracture may compress the small blood vessels and induce an ischemia leading to release of pain stimulating compounds.

Tolperisone causes preferential antinociceptive activity against thermal stimulation that is likely to be attributed to its local anesthetic action.[3]

Tolperisone causes muscle relaxation by its action on central nervous system. It also leads to membrane stabilization & has analgesic activity. This muscle relaxation is dose dependant.

Pharmacokinetics:

Tolperisone gets absorbed quickly in the body and peak plasma concentration is achieved usually 0.5–1.0 h after oral ingestion. The Cmax is between 64.2–784.9 ng/ml and Tmax is 0.90 ±0.31 h.[4] Absolute bio-availability is approximately 17% due to hepatic first-pass effect. Tolperisone undergoes both P450-dependent and P450-independent microsomal biotransformations[5]. It is eliminated from the body primarily through the kidneys - 85% and 98% of the given dose is eliminated in the urine after 8 hours and 24 hours respectively. Elimination half-life of Tolperisone HCl is between 1.5 - 2.5 hrs.

Tolperisone can be administered through various routes (oral, intra-arterial, intrathecal, intraspinal, intramuscular, intraperitoneal, intravenous, intranasal and inhalation). However, intramuscular, intravenous and oral are preferred routes of administration. Therapeutically effective dosage of tolperisone ranges from approximately 75 to 1500 mg/day.

Pharmacokinetic profile of tolperisone varies from individual to individual. There is a need for individualization of dosage of tolperisone while administering the therapy to the patient.[4]

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Drug Interactions

No drug interactions of Tolperisone hydrochloride have been reported with the concomitant intake of benzodiazepines, non-steroidal anti-inflammatory drugs (NSAIDs), analgesics and alcohol.

Indications

- Low back pain syndrome[6]
- Painful reflex muscle spasm[7]
- Post-cerebral stroke spasticity [8]
- Neurolathyrism[9]
- Trapezitis
- Rehabilitation programmes
- Periarthritis

Precaution and Contraindication

Tolperisone hydrochloride tablets are contraindicated in patients who are hypersensitive to any of the ingredients of the formulation. Tolperisone is contraindicated in patients suffering from myasthenia gravies and in patients. Since, no well-controlled studies have been carried out with the drug in pregnant and lactating women; tolperisone should be used with caution in such patients keeping the risk-benefit ratio of the drug.

Side Effects

It may cause excessive sweating, urticaria or erythema. Also may lead to GI upset with abdominal paon, nausea, vomiting, diarrhea, flatulence or dryness of mouth.

Dosage Recommendations

Therapeutic dose of tolperisone varies with condition and can be determined empirically. Tolperisone dose will vary depending upon the age, weight and general condition of the individual and will also depend on the severity of the condition.

The usually recommended dose of Tolperisone hydrochloride in adults is 50 mg tablet given three times a day (i.e. a daily dose of 150 mg) that can be increased to a maximum daily dose of 600 mg if required. In children, the drug is administered in a daily dose of 5-10 mg/kg/day, given in three divided doses. The dose of the drug should be reduced in the elderly and in patients with hepatic or renal insufficiency. The dosage of the drug should be maintained until the therapeutic effect is reached. Afterwards, the dosage of the drug should be reduced gradually.

Place in Therapy

Its good tolerability with minimum contraindications and

safety makes tolperisone a suitable choice of muscle relaxant for a broad range of patients including elderly patients with concomitant diseases.

References

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