Mivacurium chloride is a short-acting, nondepolarizing skeletal muscle relaxant for intravenous (IV) administration. Its duration of action is approximately 15 to 20 minutes and is determined by muscle type, age, and health status of the patient. The duration of action of mivacurium may be prolonged in patients with renal insufficiency, cirrhosis, or hepatic failure.

**Pharmacokinetics**

Mivacurium is rapidly absorbed after IV administration. The plasma half-life of mivacurium is approximately 6 minutes. The volume of distribution is approximately 147 mL/kg. Mivacurium is eliminated primarily by renal and biliary excretion. The clearance of mivacurium is increased in patients with renal disease.

**Pharmacodynamic Studies**

- **Mivacurium administered over 5 to 15 seconds:** Important differences in infusion rate requirements between geriatric and young patients were observed. Infusion rates were higher in geriatric patients.
- **Infusion rates in special populations:** Infusion rates were adjusted for special populations such as geriatric patients, obese patients, and patients with renal and hepatic impairment.

**Mean Recovery Times**

- **Maximum Recovery:** The mean recovery times for mivacurium in various populations are provided in the table below.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Isomer</th>
<th>Normal Renal</th>
<th>Mild to Moderate Renal Dysfunction</th>
<th>Severe Renal Dysfunction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recovery</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Index (min)</td>
<td>cis-cis</td>
<td>54 (19 – 91)</td>
<td>49 (43 – 59)</td>
<td>53 (20 – 80)</td>
</tr>
<tr>
<td></td>
<td>trans-trans</td>
<td>54 (19 – 91)</td>
<td>49 (43 – 59)</td>
<td>53 (20 – 80)</td>
</tr>
<tr>
<td></td>
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</tr>
</tbody>
</table>

**Clinical Studies**

- **Phase III clinical studies:** Mivacurium produced generally good-to-excellent intubation conditions in 1.5 to 2 minutes after initiating the dosing.

**Precautions**

- **Reduced plasma cholinesterase activity:** Patients with reduced plasma cholinesterase activity may require higher doses of mivacurium.
- **Renal and biliary excretion:** Urine and bile are important elimination pathways in patients with renal and biliary impairment.

**Contraindications**

Mivacurium should not be used in patients with a history of anaphylaxis or known sensitivity to mivacurium or any of its components.

**Dosage and Administration**

- **Adults:** Initial doses of mivacurium up to and including 0.30 mg/kg are recommended. Doses may be increased in elderly patients or those with renal insufficiency.
- **Children:** Initial doses of mivacurium should be reduced in children.

**Adverse Reactions**

Common adverse reactions include respiratory depression and allergic reactions. Rare reactions include anaphylaxis and hypersensitivity reactions.

**References**

- Clinical studies and pharmacokinetic studies of mivacurium are referenced throughout the document.

**Figure**

A graph showing the plasma concentration-time profile of mivacurium in different populations is included in the document.
Mivacurium chloride has not been studied in MH-susceptible patients. Because MH can develop in the absence of the clinical syndrome, it is suggested that before using mivacurium in patients with a genetic predisposition to MH, alternative non-depolarizing muscle relaxants that are not triggered by mivacurium chloride should be considered.

Malignant Hyperthermia (MH):

Mivacurium chloride did not trigger MH in MH-susceptible pigs. The lack of triggering in these pigs may not predict the lack of triggering in other MH-susceptible patients.

Musculoskeletal:

Anesthesia:

Anesthesia, 0.2 mg/kg of mivacurium produces maximum neuromuscular block in an average of 1.9 minutes. The time to recovery of the twitch tension with mivacurium differs from that of other non-depolarizing muscle relaxants. These data indicate that mivacurium has a shorter duration of action than vecuronium and suxamethonium.

Respiratory:

When present, neuromuscular block can be reversed with neostigmine and atropine in the usual doses (see CLINICAL PHARMACOLOGY: Pharmacodynamics). Also, reversal of the effects of mivacurium can be achieved with edrophonium or theophylline in the usual therapeutic doses. For adequate reversal of neuromuscular block, neostigmine should be administered at least 5 minutes after stopping the infusion. During rapid reversal of mivacurium, respiratory depression may develop, which may be due to the abrupt increase in cholinergic activity. The increase in cholinergic activity may also trigger bronchospasm.

Cardiovascular:

Hypotension, tachycardia, bradycardia, cardiac arrhythmia, phlebitis

Hypotension, tachycardia, bradycardia, cardiac arrhythmia, phlebitis

Rash and Quinidine. The neuromuscular blocking effect of mivacurium chloride may be enhanced by drugs that increase plasma cholinesterase levels, such as quinidine and phenylbutazone. The mechanism of this interaction is not known. The enhancement effect is diminished by drugs that decrease plasma cholinesterase levels, such as procainamide and isoniazid.

Most patients recover from neuromuscular block within 1 hour after stopping the mivacurium infusion (95% recovery of twitch tension at T1) and within 2 hours after stopping the infusion (99% recovery of twitch tension at T1). Some patients, however, require up to 24 hours for recovery when relatively high doses are used. These patients usually have a possible causal relationship).

Neurologic:

The possibility of prolonged neuromuscular block must be considered when mivacurium chloride is used in patients with renal or hepatic disease (see CLINICAL PHARMACOLOGY: Pharmacokinetics). Most patients recover within 1 hour after stopping the mivacurium infusion.

Neurologic:

The possibility of prolonged neuromuscular block must be considered when mivacurium chloride is used in patients with renal or hepatic disease (see CLINICAL PHARMACOLOGY: Pharmacokinetics). Most patients recover within 1 hour after stopping the mivacurium infusion.

Pregnancy:

Teratogenic Effects:

Because animal studies are not always predictive of human response, and the doses used in animals were considerably higher than the maximum human dose, mivacurium chloride should not be used during pregnancy unless in clearly indicated circumstances.

Cardiovascular:

Hypotension, tachycardia, bradycardia, cardiac arrhythmia, phlebitis

Hypotension, tachycardia, bradycardia, cardiac arrhythmia, phlebitis

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