U.S. National Library of Medicine
National Center for Biotechnology Information

NLM Citation: LiverTox: Clinical and Research Information on Drug-Induced Liver Injury [Internet]. Bethesda (MD): National Institute of Diabetes and Digestive and Kidney Diseases; 2012-. Glycopyrrolate. [Updated 2017 Jul 7].
Bookshelf URL: https://www.ncbi.nlm.nih.gov/books/

Glycopyrrolate

Updated: July 7, 2017.

OVERVIEW

Introduction

Glycopyrrolate is an anticholinergic agent used to treat gastrointestinal conditions associated with intestinal spasm and to decrease secretions during anesthesia. Glycopyrrolate has not been implicated in causing liver enzyme elevations or clinically apparent acute liver injury.

Background

Glycopyrrolate (glye" koe pir' oh late) is a synthetic quaternary ammonium anticholinergic agent which inhibits the muscarinic actions of acetylcholine on autonomic nerve endings, decreasing respiratory and gastrointestinal secretions and intestinal motility. Glycopyrrolate has broad activity against muscarinic acetylcholine receptors, but its highly polar quaternary ammonium group makes it less likely to cross lipid membranes such as the blood brain barrier, which is believed to decrease the potential for central nervous system effects. Glycopyrrolate has been used largely for gastrointestinal conditions including peptic ulcer disease, gastrointestinal spasm and irritable colon. Glycopyrrolate was approved for use in the United States in 1961 but is now not commonly used for gastrointestinal conditions, having been replaced by more effective antiulcer agents. Glycopyrrolate is available in tablets of 1 and 2 mg in several generic forms and under the brand name Robinul. The typically recommended oral dose in adults is 1 to 2 mg two to three times daily. It is also available in a solution for parenteral injection for use during anesthesia and intubation to block vagal reflexes and reduce salivary, tracheal, bronchial and gastric secretions. Common side effects are those of parasympathetic stimulation and include dryness of the mouth and eyes, decreased sweating, headache, visual blurring, constipation, and urinary retention. Because of its structure, glycopyrrolate is believed to be less likely than other anticholinergics to cross the blood brain barrier and cause central nervous system effects such as restlessness, confusion and hallucinations. Anticholinergic agents can precipitate acute narrow angle glaucoma and acute urinary retention.

Hepatotoxicity

Like other anticholinergic agents, glycopyrrolate has not been linked to episodes of liver enzyme elevations or clinically apparent liver injury. A major reason for its safety may relate to the low daily dose.

References on the safety and potential hepatotoxicity of anticholinergics are given together after the Overview section on Anticholinergic Agents.

Drug Class: Gastrointestinal Agents; Anticholinergic Agents

PRODUCT INFORMATION

REPRESENTATIVE TRADE NAMES

Glycopyrrolate – Generic, Robinul®

DRUG CLASS

Gastrointestinal Agents

COMPLETE LABELING

Product labeling at DailyMed, National Library of Medicine, NIH

CHEMICAL FORMULA AND STRUCTURE

DRUG	CAS REGISTRY NUMBER	MOLECULAR FORMULA	STRUCTURE
Glycopyrrolate	596-51-0	C19-H28-N-O3.Br