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Ticarcillin

Updated: October 20, 2020.

OVERVIEW

Introduction

Ticarcillin is an extended-spectrum carboxypenicillin antibiotic and is used to treat moderate-to-severe infections due to susceptible organisms. Ticarcillin has been linked with idiosyncratic liver injury, but only rarely and as isolated case reports.

Background

Ticarcillin (tye" kar sil' in) is a fourth generation, extended-spectrum penicillin antibiotic which was previously used for moderate-to-severe infections caused by susceptible gram positive and gram negative agents. The extended spectrum of ticarcillin made it an appropriate agent in therapy of Pseudomonas aeruginosa. Ticarcillin also has extended activity against some Enterobacter and Proteus species. Ticarcillin has activity against most of the agents that are sensitive to natural penicillins, but is often less active. Ticarcillin is resistant to inactivation by many, but not all beta-lactamases. Ticarcillin was withdrawn from the market in the United States in 2004. Previously it was available in parenteral forms generically and under the name Ticar and is usually given in doses of 200 to 300 mg/kg per day in divided doses intravenously every 4 to 6 hours. Common side effects included nausea, diarrhea, dizziness, headache, rash and hypersensitivity reactions. Rare but potentially severe adverse events included severe hypersensitivity reactions, anaphylaxis and Stevens Johnson syndrome.

Hepatotoxicity

Intravenous ticarcillin therapy has been associated with mild and transient serum aminotransferase elevations that were generally self-limited and only slightly more common with ticarcillin than with comparative antibiotics. Much more commonly reported were instances of anicteric hepatic injury from carbenicillin, a similar carboxypenicillin with extend coverage against Pseudomonas. Persons receiving high doses of intravenous carbenicillin not uncommonly (15% to 30%) developed serum aminotransferase elevations without jaundice, which promptly fell to normal with discontinuation or switching to another antibiotic. Recurrence is common with retreatment using carbenicillin, but not with ticarcillin. A similar phenomenon occurs with intravenous oxacillin. Rare instances of idiosyncratic, clinically apparent cholestatic liver injury have been reported in persons receiving ticarcillin in combination with clavulanate, some of which resemble the rare idiosyncratic reactions that can occur with many penicillins and which resemble the cholestatic liver injury that occurs after amoxicillin/clavulanate.

Likelihood score: D (possible rare cause of clinically apparent liver injury).

Mechanism of Injury

The cause of the idiosyncratic liver injury associated with ticarcillin use was probably hypersensitivity or allergy. No cases of rechallenge or reexposure have been reported.

Outcome and Management

There have been too few cases of ticarcillin related liver injury to assess the prognosis and outcome. Patients with ticarcillin induced hepatitis should avoid reexposure to other penicillins and should take cephalosporins with caution.

References to the safety and potential hepatotoxicity of ticarcillin are provided in the drug record on Ticarcillin-Clavulanate.

Drug Class: Antiinfective Agents, Penicillins (Fourth Generation)

Other Drugs in the Class: Piperacillin, Piperacillin-Tazobactam, Ticarcillin-Clavulanate

PRODUCT INFORMATION

REPRESENTATIVE TRADE NAMES

Ticarcillin – Generic, Ticar®

DRUG CLASS

Antiinfective Agents

COMPLETE LABELING

Product labeling at DailyMed, National Library of Medicine, NIH

CHEMICAL FORMULAS AND STRUCTURES

DRUG	CAS REGISTRY NO	MOLECULAR FORMULA	STRUCTURE
Ticarcillin	34787-01-4	C15-H16-N2-O6-S2