

Maryland
Department
of Health and
Mental Hygiene
Office of
Health Care Quality
Spring Grove Center
55 Wade Avenue
Catonsville, MD 21228

Martin O'Malley,
Governor
Anthony G. Brown,
Lt. Governor
John M. Colmers,
Secretary, DHMH
Wendy Kronmiller
Director, OHCQ

IV Promethazine Injuries

Case study: A 40 year-old patient is brought to the emergency department of a Maryland hospital with complaints of abdominal pain, nausea and vomiting for one day. The patient had a remote history of IV drug abuse. An IV was inserted in the forearm and labs were drawn. The nurse prepared 12.5 mg promethazine in 10cc normal saline and started administering the medication slowly, per protocol. The patient complained of burning at the IV site and the nurse stopped the administration and removed the IV with approximately one half of the dose given. Within three hours the patient's index finger and thumb were dusky and blue. Surgery and orthopedics were consulted and supportive care was initiated. The physicians contacted a regional hand specialty hospital, which advised against surgery. Various treatments were tried over the next three days, including warm compresses and medications. There was no indication of extravasation or compartment syndrome. Arterial and venous Doppler studies were normal. The patient was transferred to a regional referral center on the third day where his thumb and index finger were amputated.

The Office of Health Care Quality has received three reports of serious vascular injury associated with the intravenous injection of promethazine (Phenergan) over the past two years. All three of these events ended with the patients developing ischemia and needing amputation.

Promethazine is a phenothiazine-derivative antihistamine used for managing nausea and vomiting, and used as an

adjunct in treating severe allergic reactions. According to the Institute for Safe Medication Practices (ISMP), promethazine is formulated with phenol and has a pH of 4 to 5.5.¹ Severe injuries have been reported, in Maryland and other states, due to promethazine's caustic effects on the intima of blood vessels and on surrounding tissues. There is no effective treatment or reversal agent for inadvertent extravasation.

A musician in Vermont was awarded 7.4 million dollars in a malpractice settlement in 2004 after IV administration of promethazine caused her to lose part of her arm.

Case study: a 90 year-old patient was sent to the emergency department with nausea, vomiting, and diarrhea. She had an IV inserted in the back of her wrist. She was given 12.5 mg of promethazine through this IV by the nurse. Within a few hours, she complained of pain in her hand. Her thumb and index finger were pale and pulseless. The IV was immediately removed and the patient was sent to a regional referral center for a neurovascular assessment. The initial assessment was that the radial artery had been transected. When the amputation was performed, the surgeon noted that there was widespread tissue necrosis but the arteries were intact and patent.

Recommendations:

The ISMP has recommended that the FDA reevaluate the product labeling for promethazine and eliminate the IV route.¹ Until that happens, here are some recommendations for safer

Continued

Clinical Alert

Maryland Department of Health and Mental Hygiene

Office of Health Care Quality

Spring Grove Center, Bland Bryant
Building, 55 Wade Avenue
Catonsville, MD 21228

Clinical Alert

is published periodically by the
Office of Health Care Quality

For additional information contact

Patricia Nay, MD, Medical Director

Phone: 410-402-8007

Email: pnay@dhhm.state.md.us

or

Anne Jones, RN, BSN, MA

Nurse Surveyor

Phone: 410-402-8016

E-mail: ajones@dhhm.state.md.us

administration. These recommendations are culled from various sources, including the RCAs submitted in response to these events, the ISMP, the Pennsylvania Patient Safety Authority, and the Infusion Nurses Society.

1. Stock only the 25mg/ml concentration, not the higher concentration of 50mg/ml.
2. Dilute and Infuse slowly through a large bore vein. Never administer into veins in the hands or forearms. A central line is the preferred IV route but if this is not possible, consider dilut-

ing in a mini-bag and infusing over 10 to 15 minutes. Give through a running IV by the furthest port from the patient. The literature recommends against using an infusion pump, since the medication can extravasate without anyone noticing unless the nurse stays with the patient during the infusion.

3. Tell the patient to report any burning or pain immediately. It should go without saying that the nurse needs to immediately stop the infusion and remove the IV if

the patient complains of pain. Unfortunately, some of the case studies from other states indicate that nurses occasionally ignore the patient's complaints.

4. Educate staff and create CPOE and pharmacy alerts. Revise standard order sets to reflect new administration guidelines.
5. Consider alternatives. Many hospital have simply removed IV promethazine from their formularies.

¹. <http://www.ismp.org/Newsletters/acute-care/articles/20060810.asp>