

Case Report

An unusual adverse event with the use of intravenous bolus of promethazine (phenergan)

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ABSTRACT

The earlier used sedatives like promethazine, pethidine and pentazocine (fortwin) are not commonly used these days but at times they are used especially in periphery for postoperative sedation and in gynecological surgeries and wards. We hereby report an unusual adverse event associated with the use of intravenous bolus of Promethazine. With this case report we want to highlight that if promethazine is to be used for any purpose it should be given preferably intramuscular and if given intravenously, should be diluted and given slowly in a good running cannula.

Keywords: Adverse effect, Extravasation, Intravenous promethazine, Tissue necrosis

INTRODUCTION

Now a day, the commonly used perioperative sedative are midazolam and dexmedetomidine due to their excellent clinical safety profile.¹ The earlier used sedatives like promethazine, pethidine and pentazocin (fortwin) are not commonly used but at times they are used especially in periphery for postoperative sedation and in gynecological surgeries and wards. We here report an unusual adverse event associated with the use of intravenous (IV) bolus of promethazine.

CASE REPORT

A 50year female with unremarkable pre-anesthetic evaluation was posted for vaginal hysterectomy under spinal anaesthesia. Intravenous line was secured with 18 gauge cannula in a single prick. Ringer lactate was started, and the drip was free flowing without any obvious subcutaneous swelling or edema. For spinal block, a 26 G quinke (B Braun) spinal needle was used at L3/4 in the midline with the patient in the sitting position. Cerebrospinal fluid flowed from the needle after a single

attempt and 2.8ml of 0.5% heavy bupivacaine was injected after initial aspiration. A T6 level of block was obtained by 5min. Intraoperatively patient had shivering, for which injection pethidine 20mg was given. However patient inspite of receiving 20mg pethidine was anxious. For that 12.5mg of promethazine was given as slow IV push. Same dose of promethazine is repeated after 1hr intraoperatively. Rest of the intraoperative period was uneventful. No other drug was injected after promethazine.

In the postoperative period, a bluish discoloration was noted on the dorsum of the hand in which the cannula was secured. And on touch the dorsum of the hand was cold. It raised a suspicion of allergic drug reaction or extravasation of the IV bolus drug into the subcutaneous plane. An urgent Doppler was done, which revealed normal blood flow in the radial and ulnar artery. Immediately rewarming measures were started. The cannula was flushed with normal saline. However, it was inadvertently removed. The bluish discoloration recovered, and hand became pinkish with features of congestion in a period of around 2hours. Injection enoxaparin was given 4hours postoperatively in a low

dose of 0.4mg subcutaneously. The limb was kept raised and no other ointment was applied on the intravenous cannulation site. This hand became normal within 24hours. The bluish discoloration could have been because of allergic reaction to bolus of promethazine or extravasation of drug into subcutaneous plane. The drugs administered before promethazine, added no adverse effect. So, it is related most probably to the use of promethazine.

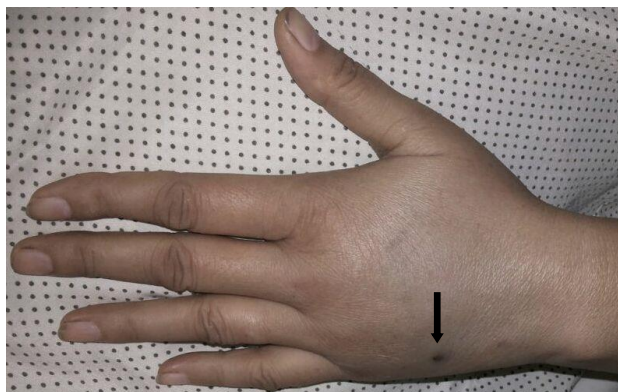


Figure 1: Bluish discoloration and congestion of the hand with pointer at the cannulation site.

DISCUSSION

Promethazine is a commonly used drug in periphery and in gynecological wards and in postoperative sedation. It possesses antihistamine, sedative, anti-motion sickness, and antiemetic effects.² Promethazine was the third most frequently prescribed antiemetic drug in the ED, after ondansetron and diphenhydramine.³ Promethazine is highly caustic to the intima of blood vessels with a pH between 4 and 5.5, and inadvertent intra-arterial or subcutaneous (SQ) administration results in burning, erythema, pain, swelling, severe spasm of vessels, thrombophlebitis, venous thrombosis, nerve damage, paralysis, abscess, tissue necrosis, and gangrene.⁴ So its intramuscular injection is preferred over the IV route of administration. Many a times, to get desired effect quickly it is used intravenously.

According to the safe practice recommendation, IV administration of promethazine is well tolerated, but sometimes may be hazardous and to reduce these hazards, the following strategies should be considered to prevent or minimize tissue damage when administering IV promethazine: Smaller doses like 6.25 to 12.5mg should be considered, especially for elderly patients.⁵ The drug can be diluted in normal saline to reduce vesicant effects and to enable slow IV administration. Extravasation is also recognized more quickly when promethazine is diluted than when it is given in a concentrated form. Promethazine should be administered only via a large-bore vein, and not by veins in the hand or

wrist. The patency of the access site should be checked before administration. The medication should be injected through a running IV line at the port that is farthest from the patient's vein. IV promethazine should be administered slowly over 10 to 15minutes. Revising order forms regularly to assess the need for continuing the drug. While administering intravenously, ask patient for any burning or pain at the injection site during or after the injection. A high alert drug alarm should appear on computer-generated medication administration records (MARs), on electronic MARs, each time anybody accesses and administers a dose of promethazine. Timely managing unintentional intra-arterial injection or perivascular extravasation by giving sympathetic block and heparinization. Also, we should consider using safer alternatives like 5-hydroxytryptamine type 3 (5-HT₃) receptor antagonists and safer sedatives for various conditions commonly treated with IV promethazine. Last but not the least, removing parenteral promethazine from hospital and ED formularies, due to the availability of multiple safe alternatives.

CONCLUSION

With this case report we want to highlight that Parenteral promethazine (Phenergan) is a vesicant that can cause catastrophic tissue injury. So, safer alternatives should be used in its place whenever possible. And when promethazine is to be used for any purpose it should be given preferably intramuscular and if given intravenously, should be diluted and given slowly in a good running cannula.

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