

Epinephrine Induced Digital Ischemia After Accidental Injection from an Auto-injector Device

The use of epinephrine auto-injectors for prehospital treatment of severe allergic reactions in children has become increasingly common [1], widely accepted and prescribed [2]; 5% of the pediatric population in the United Kingdom has some form of food allergy [3].

An 11-year-old girl accidentally injected her right thumb with the EpiPen. This injection caused immediate ischemic changes in the distal right thumb and developed paraesthesia, pain, pallor, prolonged peripheral capillary refill time and cold blue right thumb. Examination of the right thumb revealed a puncture wound centrally on the volar pad. She received warm water immersion and local nitroglycerin paste. A mixture of 0.5 mg of phentolamine, 1.0 mL of normal saline with 1.0 mL of 2% lidocaine was prepared and kept ready for half of this mixture to be infiltrated subcutaneously at the puncture site, and the rest to be infiltrated along the course of the digital arteries should her symptoms worsen or her clinical condition deteriorates. She had an uneventful recovery following a period of observation.

There is a greater incidence of accidental auto-injection into digits [1]. Epinephrine is a sympathomimetic agent and has both α -adrenergic and β -adrenergic responses. Several methods have been tried to reverse the effect of epinephrine accidentally injected into a digit including spontaneous reversal, warm water immersion, systemic or topical nitroglycerin, topical infiltration with terbutaline, topical and /or systemic phentolamine.

Topical infiltration of phentolamine is the most appropriate treatment as it is easy to perform, reverses ischaemia quickly and efficiently, has no reported adverse reactions, and is effective in late presentations [1, 4-5]. Phentolamine, a short acting α -blocker used mainly

to control blood pressure during surgical resection of pheochromocytoma, has been used as an effective α -adrenergic antagonist appropriately. Phentolamine at puncture site, digital block and intra-arterial administration have proved beneficial in reversing the vasoconstrictive effect of epinephrine induced digital ischaemia. However, a further injection may be required to completely restore perfusion.

The most appropriate evidence-based management for this situation was reviewed. If on assessment there is adequate peripheral perfusion of the digit; patient may be discharged. If the peripheral perfusion is compromised, the intradigital sequential administration of phentolamine into the puncture wound and along the course of digital arteries on both sides is the preferred management at any age, and even in delayed cases not responding to conservative management.

RAMNIK PATEL AND HEMANT KUMAR

Department of Paediatric Surgery,

Directorate of Children's Services,

Univeristy Hospitals of Leicester NHS Trust,

Leicester Royal Infirmary,

Infirmary Square, Leicester LE1 5WW, United Kingdom.

patelramnik@rediffmail.com

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