Fat Emulsion Therapy Given Intraosseously in Massive Verapamil Overdose

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Introduction

- Intravenous fat emulsion (IFE) therapy is used in treating various medication overdoses.
- The standard route to administer IFE therapy is intravenous (IV); however, successful vascular access can be difficult in emergent situations.

Case Description

History of Present Illness

24 year-old female presented to Emergency Department (ED) following a deliberate overdose. Ingestion was reported as 1-2 hours prior to arrival. Patient weight was 81.8 kg.

- Verapamil 240 mg extended release (quantity 30 tablets)
- Verapamil 80 mg immediate release (quantity “handful”)

Past Medical History

Anxiety, depression, multiple suicide attempts by overdose, chronic sinus tachycardia, anemia, hyperlipidemia, migraines

Management Timeline

- Patient arrival via ground ambulance
- Peripheral IV established (PIV); calcium gluconate administered.
- Normal saline bolus started
- Insulin + dextrose administered; PIV access lost
- Central line placed; norepinephrine drip started
- IO placed
- IFE started via IO
- PIV established
- IFE moved to PIV
- Transferred to medical intensive care unit

Hospital Day 2

- Patient expired

Discussion

Simulations comparing IO to central line placement show that IO placement is faster and associated with fewer errors.\(^1\) IO placement has also been shown to be a feasible technique for prehospital care in unstable patients.\(^2\) As a result, IO access is becoming a widely accepted method for establishing parenteral access when PIV access cannot be established and central line placement is not feasible.

Per manufacturer recommendation, IFE can be infused into the same central or peripheral vein as other parenteral nutrition.\(^3\) Since evidence for compatibility with other IV medications is limited, a dedicated line for IFE administration is required.

IFE administration is recommended for treatment of verapamil toxicity by up to 62% of U.S. poison control centers.\(^4\)

Current literature on IFE administration via IO route is limited to rats in bupivacaine-induced toxicity.\(^5\)

Conclusion

- To our knowledge, this is the first report of IFE administered via IO route in humans and illustrates a novel way of administering IFE therapy in emergencies.
- There are potential complications with patient tolerability and infusion pump use.

References