The effects of intraosseous and intravenous vasopressin administration on pharmacokinetics

OBJECTIVE: Purposes of this study were to compare intravenous (IV) and sternal intraosseous (SIO) administration of vasopressin relative to concentration maximum (Cmax), time to maximum concentration (Tmax), and mean concentration in a cardiac arrest model” Vallier et al (2016).

DESIGN: Prospective, between subjects, randomized experimental design.

SETTING: Vivarium.

SUBJECTS: Yorkshire-cross swine (N = 16)

INTERVENTION: Swine were anesthetized, placed into cardiac arrest, and after 2 minutes,
cardiopulmonary resuscitation was initiated. After additional 2 minutes, 40 units of vasopressin was administered either by SIO or IV route. Blood samples were collected over 4 minutes. Cmax and means were analyzed using high-performance liquid chromatography tandem mass spectrometry.

MAIN OUTCOME MEASUREMENTS: Cmax, Tmax, and mean plasma concentrations.

RESULTS: There were no significant differences in the SIO and IV groups in Cmax (p = 0.96) or Tmax (p = 0.27). The IV and SIO group had a mean Cmax of 68,151 ± SD 21,534 and 69,034 ± SD 40,169 pg/mL, respectively. The IV and SIO vasopressin groups had a mean Tmax of 105 ± SD 39 and 80 ± SD 41 seconds, respectively.

CONCLUSION: A multivariate analyses of variance indicated that there were no statistically significant differences in pretest data, Cmax, and Tmax; a repeated analyses of variance indicated that there were no significant differences between the groups relative to mean concentrations of serum vasopressin over time (p > 0.05).

CONCLUSION: When a patient is in cardiac arrest, it is essential to establish rapid and reliable access to blood vessels so that life-saving drugs can be administered and the SIO provides such a route.

Reference:


Thank you to our partners for supporting IVTEAM