INTRODUCTION

When IV access is difficult, intraosseous (IO) vascular access is useful for fluid and medication delivery. Once IO access is established it is possible to draw IO-derived blood which may correlate with venous samples for certain laboratory tests. In acute care settings, serum lactate has been found to be a potentially useful biomarker when managing patients with severe sepsis or trauma. When immediate analysis of a biomarker such as lactate is needed and venous access difficult, there is little clinical data for the suitability of intraosseous blood for determining lactate and PT/INR levels.

OBJECTIVES

In a series of studies, the objective was to add to available data comparing intraosseous marrow (the initial 1 mL aspirate obtained from the IO catheter), intraosseous blood (subsequent aspirate), and venous and capillary blood to investigate correlations between samples for serum lactate and PT/INR levels.

METHODS


RESULTS

- i-STAT® specimen lactate values:
  - Significant correlation between venous blood and IO marrow (n=20, r=0.76, p<0.001)
  - Significant correlation between venous blood and IO blood (n=46, r=0.72, p<0.001)
- Lactate Plus values from capillary and venous blood lacked correlation in this study
- i-STAT® and Lactate Plus matched IO samples had similar means but lacked significance (possibly due to small sample size)
- The PT/INR levels did not correlate

CONCLUSIONS

Using a point of care analyzer, lactate levels from intraosseous blood appear comparable to lactate levels from venous blood, reflected in a positive correlation in healthy subjects. Caution should be exercised with their interpretation in clinical settings. PT/INR values did not correlate in this study.

Limitations: The primary limitation of this study is subjects were healthy; further investigation is needed to determine if the relationship between intraosseous and venous lactate values exists in patients when lactic acidosis is a factor. Sample size is also limited.

REFERENCES