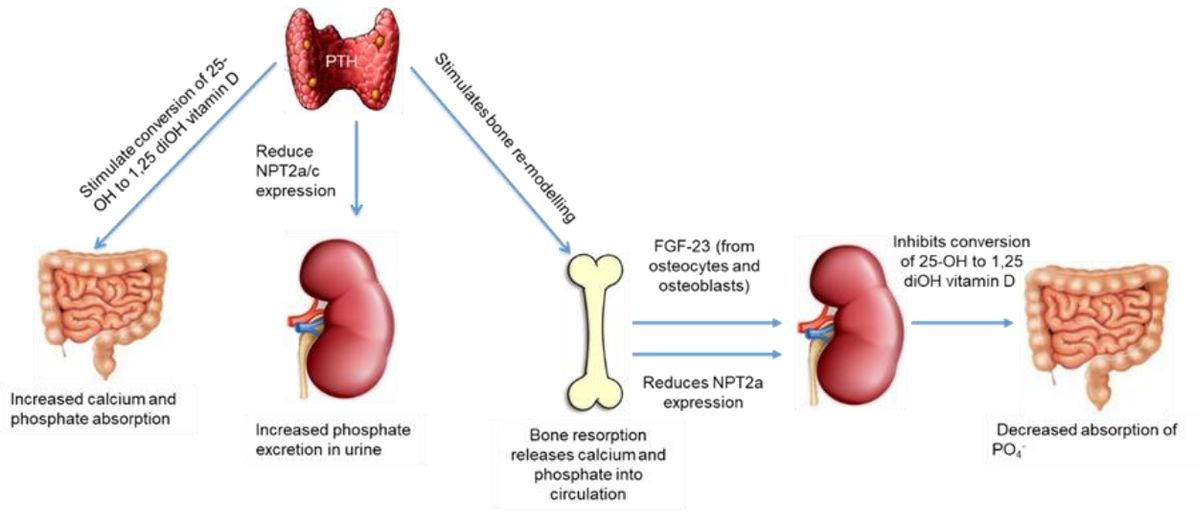
Investigation of the effect of pre-analytical variation on plasma Fibroblast Growth Factor 23 (FGF-23) levels

Authors: Wotherspoon, A.C.[1], Hamilton, P.[1], McDonnell, M.[1], Roberts, B.[1]
[1]Belfast Health and Social Care Trust

Introduction

Fibroblast Growth Factor 23 (FGF23) is a recently identified hormone involved in phosphate homeostasis. Phosphate levels vary with dietary intake, therefore FGF23 could increase to increase urinary excretion of phosphate to maintain serum levels. Additionally, a number of peptide hormones (e.g. insulin, calcitonin, glucagon) are highly unstable in vitro. Despite its growing popularity, little is known about the effect of pre-analytical variation on FGF23 levels in plasma. This project aimed to investigate the effect of delayed separation post venepuncture and fasting status on measured FGF23 levels in plasma samples from healthy volunteers.



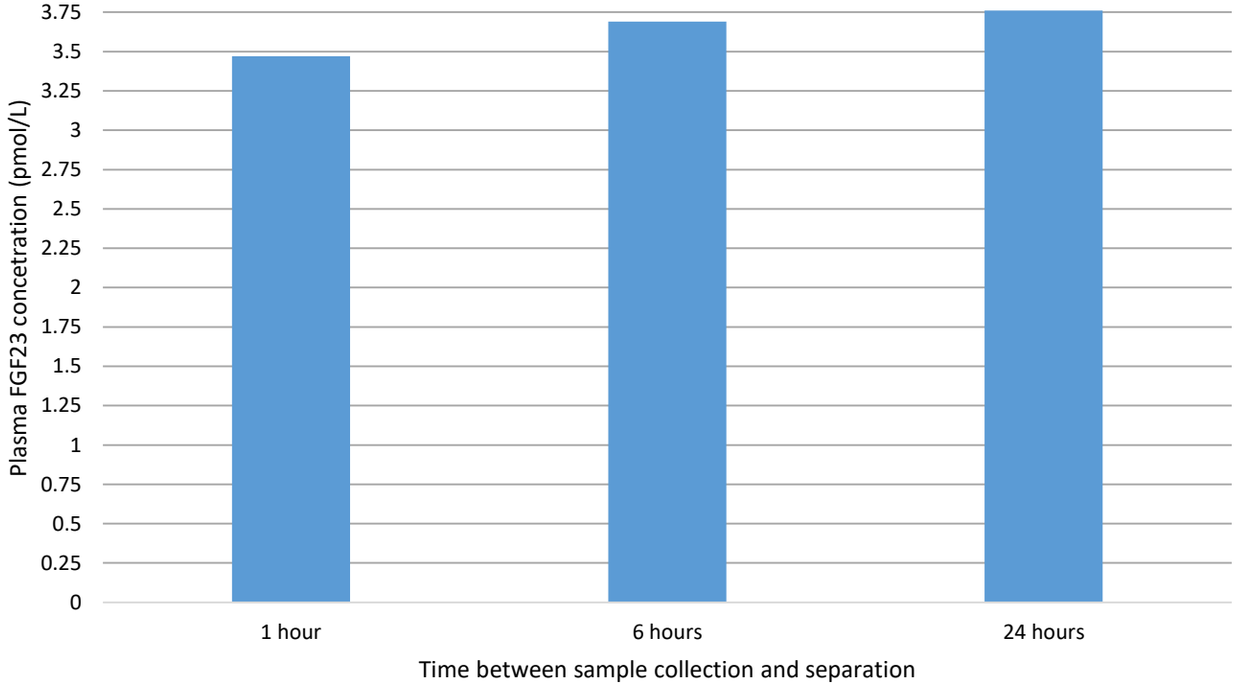
Methods

To investigate the effect of pre-analytical factors on FGF23, plasma samples were collected from healthy volunteers after an overnight fast and post-prandially. Fasted samples were stored at room temperature prior to separation at one, six, and 24 hours post venepuncture. Healthy volunteers were recruited from laboratory staff, all of whom gave written informed consent. FGF23 levels were measured using a commercially available Enzyme-Linked Immunosorbent Assay (ELISA; BioMedica, Vienna, Austria), which measures the C-terminal portion of FGF23.

Results

A total of seventeen healthy volunteers were included in the study. Mean (SD) levels of FGF23 at 1 hour, 6 hours and 24 hours separate were 3.47 (4.80), 3.69 (5.37), and 3.76 (5.29) respectively. No significant difference in FGF23 levels was observed with delayed separation either at six or 24 hours, when compared to one hour (*P*=0.549 and 0.508 respectively). Fasting status also did not appear to have a significant effect on FGF23 when compared with levels measured in post-prandial samples (Fasting mean [SD]: 3.47 [4.80], post-prandial mean [SD]: 3.55 [5.29]; *P*=0.109).

Mean plasma FGF23 levels following delayed sample separation



Conclusion

Unlike some other peptide hormones, FGF23 levels do not appear to be significantly affected by delayed separation or by fasting status.

Acknowledgments

The authors would like to thank the participants for their time and sample contributions. We would also like to thank the staff within the Renal unit for their help in facilitating the study.