

New ways to deal with known preanalytical issues: use of transilluminator instead of tourniquet for easing vein access and eliminating stasis on clinical biochemistry.

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Abstract

INTRODUCTION:

Tourniquet due venous stasis can alter both concentration and/or activity of several blood analytes, but is rarely regarded as an issue of laboratory variability. To overcome the problem transillumination devices (TD) have been proposed for a stasis-free phlebotomy. In this paper the use of a TD in place of tourniquet during blood collection has been evaluated.

MATERIALS AND METHODS:

Blood was collected from 250 volunteers divided in five homogenous groups of tourniquet times (G1: 30 sec, G2: 60 sec, G3: 90 sec, G4:120 sec, G5: 180 sec) and compared to blood obtained using TD. All samples were analyzed for glucose (GLU), total protein (TP), albumin (ALB), triglycerides (TRIG), potassium (K), sodium (NA), phosphate (PHOS), calcium (CA), alkaline phosphatase (ALKP) and magnesium (MG).

RESULTS:

In respect of TD, G1 did not show statistically significant increases in all clinical chemistry tests; G2 showed increases for GLU, TP, ALB, TRIG, K, CA, MG and ALKP. G3 and G4, showed no significant increase only for PHOS. G5 showed significant increases in all the tests evaluated. Moreover, clinically significant variations were observed for TP, ALB, K and CA in G2 to G5; for NA in G3 to G5; for MG in G4 and G5; for GLU, TRIG, ALKP only in G5.

CONCLUSIONS:

These results support the application of TD in blood collection for routine clinical chemistry laboratory tests, suggesting its use should be more diffused.