

ABSTRACT

To examine quantitative urine and creatinine clearance, 24-hour urine is used as sample. Storage in room temperature without preservative may result in urine decomposition, leading to the less accurate result of examination. This study was undertaken to disclose effect of storage method on the change of creatinine, calcium, and phosphate levels in urine stored for 24 hours. Types of treatment used in this study were storage in room temperature, room temperature + HCl, temperature of 2 - 8 °C and 2 - 8 °C + HCl. Fresh urine samples were obtained from 30 patients who met the inclusion criteria. Samples were taken using selective sampling method. As a comparison, an examination had been done to urine sample without storage, in addition to that using test strip.

Creatinine examination was carried out using Jaffe kinetic method without deproteinization, while urine phosphate was examined with ammonium molibdat method. Both were analyzed using autoanalyzer Hitachi 704. Urine calcium was examined using Arsenazo III method and analyzed using Clinicon 4010. Test strip was done using Combur-10 M Test, as read by Mditron instruments.

The obtained result were analyzed using Kruskal Wallis non-parametric test, and followed by Mann-Whitney Test. Effect of storage method on the change of creatinine level revealed $p = 0.011$, indicating a significant difference among 4 methods of storage. Storage at room temperature was significantly different from storage at room temperature + HCl ($p = 0.047$), and significantly different from storage at the temperature of 2 - 8 °C ($p = 0.002$) and 2 - 8 °C + HCl ($p = 0.015$). Effect of storage method on the change of urine calcium level revealed $p = 0.015$, indicating a significant difference among 4 methods of storage. Storage at room temperature was significantly different from storage at room temperature + HCl ($p = 0.005$), at 2 - 8 °C ($p = 0.017$), and 2 - 8 °C + HCl ($p = 0.011$). Effect on storage method on the change of urine phosphate level also showed significant difference ($p = 0.018$) among 4 methods of storage, and significantly different from storage at 2 - 8 °C ($p = 0.037$), room temperature + HCl ($p = 0.023$), and 2 - 8 °C + HCl ($p = 0.003$).

Average change of creatinine, calcium, and phosphate levels showed that storage at room temperature had the higher average level of reduction. To assure the quality of examination result, it is recommended not to store 24-hour urine at room temperature without preservative.

Keywords: *storage method, change of urine creatinine level, urine calcium level, urine phosphate level*