

KSN 2017 Abstract

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Differentiation of Dysmorphic RBC by Automated Urine Analyzer UF-1000i System

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Objectives :

- The recently developed UF-1000i urine particle analyzer is a fully automated urine analyzer that incorporates flow cytometry as well as impedance detection. It claims to be specific for detection small RBC & large RBC proportion of total RBC.
- Thus UF-1000i small RBC fractions may be useful in finding dysmorphism of RBC in hematuria patients thus it may give early information to find GN.
- The aim of this study was to evaluate diagnostic ability & clinical significance of UF-1000i small RBC fraction in hematuria patients.

Methods :

[Phase Contrast Microscopy (PCM)]

- Specimens were centrifuged & Sediment was resuspended in supernatant. 1 drop of sediment was then examined by PCM.
- Dysmorphic RBC was defined as variation in size and shape.

[UF-1000i]

- Cells, bacteria, & casts are measured by electrical impedance for volume, forward light scatter for size & by fluorescent dye for nuclear & cytoplasmic characteristics. The results are displayed in scattergrams on a screen.

Results :

- Diagnosis & Distribution of 109 consecutive patients (male 59, female 50) with hematuria

-A. Glomerulonephritis (GN) n=15

IgAN 7, MGN 2, MPGN 2, FSGS 2, Overt proteinuria 2

-B. Chronic renal disease (CRD) n=58

CKD 31, DM nephropathy 15, Isolated proteinuria 10, HSP 1, AKI 1

-C. Other renal diseases (NGN) n=36

Urolithiasis 5, Infection 12, Unspecified hematuria 15, Kidney laceration 4

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Conclusions :

- UF1000i small RBC (%) & dysmorphic RBC(%) by PCM showed significantly different fractions between GN, CRD & NGN groups.
- UF1000i small RBC (%) revealed highest levels in GN group.
- UF1000i transforms labor intensive microscopic urinalysis to easy to use automated platform.
- Of 42 cases which were positive in dysmorphic RBC by PCM, 40 patients showed positive UF-1000i small RBC results (95.2%). This means that UF-1000i small RBC (%) have lower possibility of missing dysmorphic RBC.
- UF-1000i small RBC (%) may help to screen dysmorphic RBC to detect GN.

Keywords : Hematuria ; Dysmorphic RBC ; Small RBC fraction