

ABSTRACT AND KEYWORDS

Title: Comparing the diagnostic accuracy of detecting dysmorphic RBCs in automated urine analyzers Sysmex UX - 2000 and IRIS iQ - 200 with manual phase contrast microscopy in cases of microscopic hematuria.

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Keywords: Dysmorphic red cells, Phase contrast microscopy, Sysmex UX-2000, IRIS iQ 200.

Background: Clinical triaging of the patients with microscopic hematuria by analyzing dysmorphic red cells was an age tested tool since 1979 when Birch and Fairley pioneered in their attempt by utilizing phase contrast microscopy. Dysmorphic RBCs more than 25% was considered as diagnostic of glomerular etiology. The present day research is being channeled to provide automation in this field of urine analysis.

Aim: To compare the efficacy of newer automated urine analyzers, Sysmex UX-2000 and IRIS iQ 200 in detecting urinary dysmorphic red cells when compared to Phase contrast microscopy.

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**Methods:** 800 samples with microscopic hematuria were subjected to analysis by the automated analyzers. The red cell distribution curves obtained by Sysmex UX2000 were classified into glomerular and nonglomerular hematuria by employing Kitasato criteria. The images of red cells obtained by IRIS-iQ 200 were reclassified by the investigator and the percentage of dysmorphism was ascertained. Further the samples were processed and examined under phase contrast microscopy for assessing dysmorphism and those samples with ≥25% dysmorphic red cells were categorized into glomerular etiology.

**Results:** Among the 800 samples analyzed, the population ranged from an age group of 2 to 92 years with an almost equal male to female ratio. 77% of population with microscopic hematuria had associated proteinuria. The Sysmex UX-2000 had sensitivity, specificity, positive and negative predictive values of 94.6%, 36.9%, 16.3% and 98.1% respectively, whereas IRIS iQ200 had sensitivity, specificity, positive and negative predictive values of 39.1%, 97%, 63.2% and 92.5% respectively.

**Conclusion:** Sysmex UX-2000 with high sensitivity in detecting dysmorphic population can be recommended as a suitable screening test. IRIS iQ 200 can be utilized as a better diagnostic test with high degree of specificity.