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Urinalysis in Geriatric Patients With Urinary Tract Infection

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Context

Urinary Tract Infection (UTI) is very common among the geriatric population and can cause serious complications. Urinalysis is an invaluable tool in the diagnosis of UTI; this study examined the results of automated urinalysis compared to a reference culture procedure to identify UTI in a geriatric population.

Design

1,035 specimens were collected for urine cultures and urinalysis from residents in Long-Term Care Facilities. Urinalysis was done using Roche Urisys 2400, the tests used were: nitrate, leukocyte esterase either alone or in combination with nitrate, and erythrocyte; the test was considered positive if the results indicate a trace or greater. We calculated the sensitivity, specificity, and likelihood ratio (positive and negative). The culture was done using MicroScan Walkaway96 conventional panels. We used urine culture as the reference standard, no growth or <10,000 colonies CFU/mL were considered negative, cultures with > 50,000 colonies CFU/mL were considered positive.

Results

527(50.9 %) of the cultures were negative, 470(45.4 %) were positive and 38 (3.7 %) were contaminated. The results are summarized in table 1.

Table 1

Summary of Results*

Test	Specificity (%)	Sensitivity (%)	LR+	LR-
Leukocyte	60.3	86.2	2.17	0.23
Erythrocyte	66.6	66.0	1.97	0.51
Nitrate	97.7	40.2	17.66	0.61
Either leukocyte or nitrate	97.7	88.9	38.67	0.11
Leukocyte and nitrate	60.3	37.4	0.94	1.04

*LR indicates likelihood ratio.

Conclusion

More than 45 % of the urine specimens collected tested positive for UTI by culture. Automated nitrate, and "either nitrate or leukocyte" were helpful to rule-in UTI, but none of the automated tests examined could rule-out UTI. The "either leukocyte or nitrate" combination was useful but did not provide convincing diagnostic evidence that a negative test result indicates the absence of UTI (rule-out). Physicians should be aware of the limitations of urinalysis and it should not be used alone to screen for UTI.