DIAGNOSTIC ACCURACY OF RAPID DIPSTICK TESTS AND URINALYSIS TO PREDICT URINARY TRACT INFECTION IN HOSPITALIZED PATIENTS

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Introduction

Urinary tract infection (UTI) are the most common bacterial infections acquired in the community.
As antimicrobial resistence increase, the intention to treat must be based on good clinical and laboratory reasons. Medical practitioner's task is more difficult in patients with uncharacteristic clinical picture.
As positive diagnosis needs urine culture which is time consuming and expensive, we use for screening the dipstick test and microscopic urine analysis.
Numerous studies have evaluated the performance of these tests in emergency conditions, in symptomatic patients and population group prone to UTI, but we do not know what is the efectiveness of these tests in the screening for infection in hospitalized patients.

Aim

The aim of our study was to determine the performance of the dipstick test and urinary sediment (alone or combined) against the gold standard (urine culture) in a hospital setting.

Methods

Cross- sectional study on 903 adult hospitalized patients.
Clean catch midstream first morning voided urine was used for automated dipstick (Multistix 10 SG strips), microscopy and urine culture in all patients, after careful explanation of the correct sampling.
Urine culture was considered positive if 100.000 colony- forming units in monomicrobial culture.

The sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) for the dipstick test and urine microscopy were evaluated for different definitions of a positive screening test:
1.positive nitrite test on dipstick,
2.leucocyte more than trace on dipstick,
3.positive nitrite and leucocyte more than trace,
4.presence of bacteria in the urinary sediment,
5.more than 5 leucocyte/ field counted on microscopy,
6.presence of bacteria and more than 5 leucocyte/ field on microscopy,
7.positive dipstick and microscopy.

Results

Significant bacteriuria was detected in 357 patients. The performance for each test against the gold standard is presented in table 1.

Test	Parameter	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)
Dipstick	positive leucocyte	27.45	94.13	75.38	66.49
	positive NT	50.42	94.32	85.30	74.42
Microscopic urinalysis	> 5 leucocyte	53.50	86.99	72.90	74.10
	bacteria present	74.22	90.29	83.33	84.27
Combination of parameters					
Positive dipstick for both parameters		39.45	72.89	48.78	64.82
Positive microscopic urine analysis for both parameters		38.93	79.30	55.15	66.51
Positive NT and microscopic urinalysis (leucocyte, bacteria)		31.09	78.02	48.26	63.39

Table 1. Dipstick test and microscopic urinalysis performance for the diagnosis of urinary tract infection

Conclusions

Neither dipstick test or microscopic urine analysis is enough sensitive and specific to diagnose UTI.
The presence of bacteria on microscopy has the best performance followed by positive nitrite reaction.
Any kind of combination of the analyzed parameters does not improve the performance.

References

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