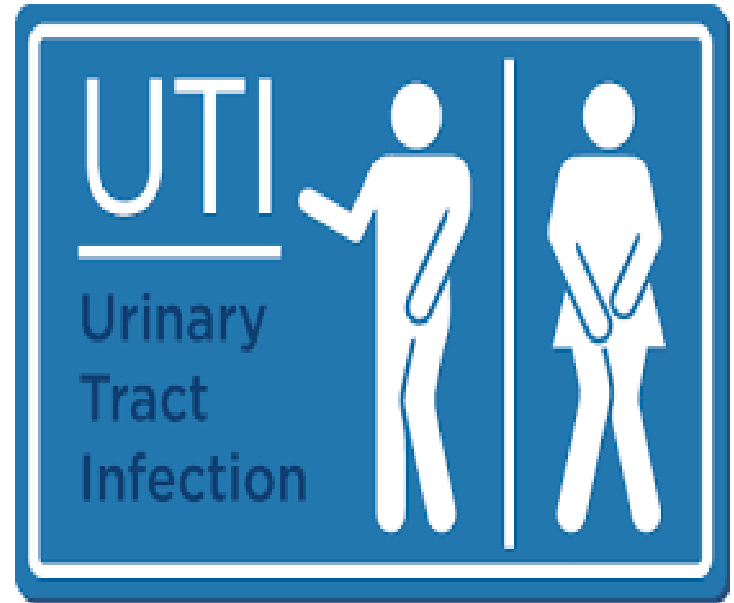


Analytical Performance of Cobas 6500 for Predicting Urinary Tract Infection

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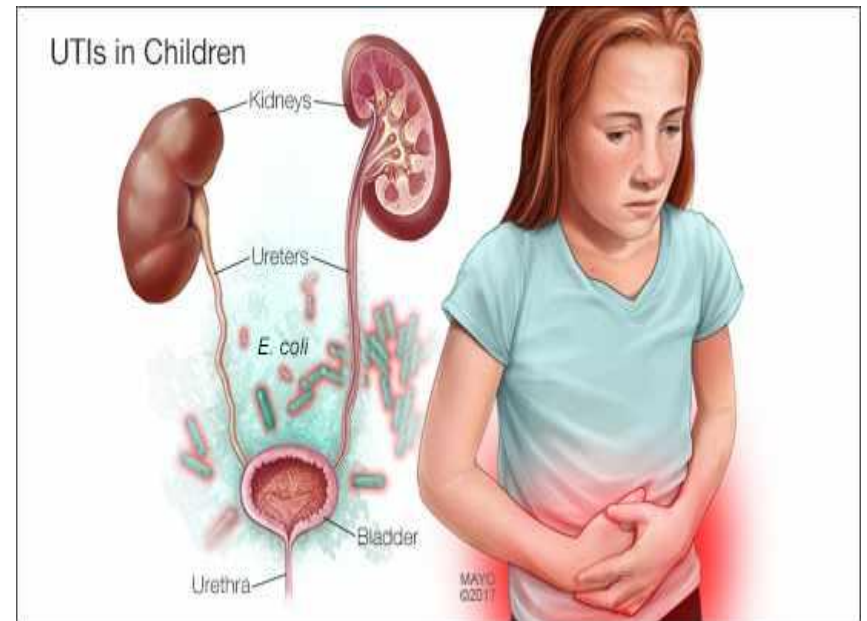
- Urinary tract infection (UTI) is the most common disease in the community, characterized by the presence of microbial pathogens in the urinary tract.



Broeren MA, Bahçeci S, Vader HL, Arents NL. Screening for urinary tract infection with the Sysmex UF-1000i urine flow cytometer. *J Clin Microbiol* 2011;49:1025–1029.

Hsiao C-Y, Yang H-Y, Chang C-H, Lin H-L, Wu C-Y et al. Risk factors for development of septic shock in patients with urinary tract infection. *Biomed Res Int* 2015;2015:1–7.

- It is more common in women particularly, and recurrent infection can cause serious complications especially in children, pregnant women and elderly patients.



Symptoms of Urinary Tract Infection

- A strong, persistent urge to urinate
- A burning sensation when urinating
- Passing frequent, small amounts of urine
- Cloudy appearance of urine
- Urine can be seen red, bright pink or cola-colored
- Strong-smelling urine
- Pelvic pain



Urine culture is used as a gold standard method in diagnosis of urinary tract infection, but it also is a major economic burden and also has a long turnaround time.



Mambatta AK, Jayarajan J, Rashme VL, Harini S, Menon S, Kuppusamy J. Reliability of dipstick assay in predicting urinary tract infection. *J Family Med Prim Care* 2015;4:265-8

Huysal K, U. Budak Y, Ulusoy Karaca A, Aydos M, Kahvecioğlu S, Bulut M, Polat M.

Diagnostic accuracy of UriSed automated urine microscopic sediment analyzer and dipstick parameters in predicting urine culture test results. *Biochem Med (Zagreb)* 2013 Jun; 23(2): 211-217.

- Urinary biochemical parameters can be evaluated using the urine dipstick screening test.
- This test is thought to be an inexpensive and rapid diagnostic alternative.



Aim

- In this study, we aimed to compare the dipstick and sediment analysis (leukocyte esterase and leukocyte) results of fully automated Cobas 6500 urine analyser with gold standard urine culture results.



Materials and Methods



- Retrospectively
- 571 patients with order for urine dipstick test, urine sediment analysis and urine culture

- Urine dipstick test and sediment analysis were performed in fully automated urine analyser.
- Cobas 6500 (Roche Diagnostics, Mannheim, Germany)
 - Cobas u 701 microscopy analyzer
 - Cobas u 601 urine analyzer (Fully automated urine strip system)



Urine culture



- A bacterial count of $\geq 10^5$ CFU/mL was considered as positive
- A calibrated 4 mL bacteriologic loop was used to inoculate urine onto 5% Columbia blood agar (RTA, Turkey) and Eosin Methylene Blue (EMB) agar plates (RTA, Turkey) within 30 min of collection. Inoculated plates were incubated aerobically at 37 °C for 24 to 48 h.

Statistical Analysis

Sensitivity, specificity, positive and negative predictive values and ROC curve analysis were performed for leukocyte esterase and leukocyte according to urine cultures.

Results

Dipstick test	Culture (+)	Culture (-)	Total
Leukocyte esterase (+)	256	85	341
Leukocyte esterase (-)	93	137	230
Total	349	222	

Sediment analysis	Culture (+)	Culture (-)	Total
Leukocyte (+)	247	77	324
Leukocyte (-)	102	145	247
Total	349	222	

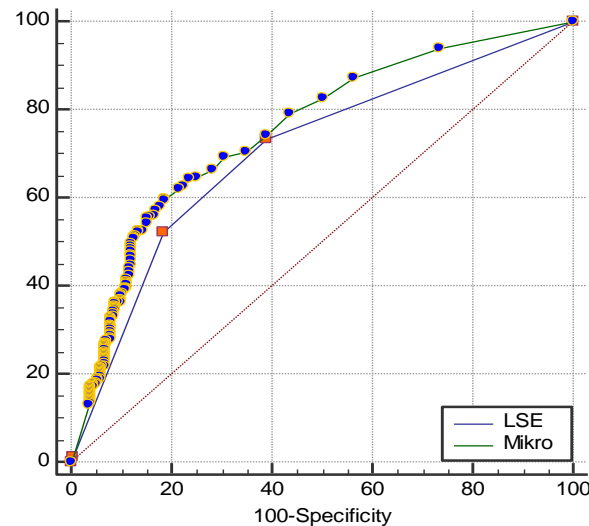
The sensitivity of dipstick **leukocyte esterase** was found to be 73.35%, whereas the specificity was 61.71%. Positive and negative predictive values were 75.07% and 59.56%, respectively.

	Leukocyte esterase	Leukocyte
Sensitivity (%)	73.35	70.77
Specificity (%)	61.71	65.31
PPV (%)	75.07	76.23
NPV (%)	59.56	58.7
AUC	0.707	0.753

Leukocytes showed 70.77% sensitivity with 65.31% specificity with positive and negative predictive values of 76.23% and 58.7%, respectively.

	Leukocyte esterase	Leukocyte
Sensitivity (%)	73.35	70.77
Specificity (%)	61.71	65.31
PPV (%)	75.07	76.23
NPV (%)	59.56	58.7
AUC	0.707	0.753

- The area under the curve (AUC) for leukocyte esterase was 0.707 and leukocyte was 0.753.



Conclusion

- Leukocyte esterase in urine dipstick test and microscopic leukocyte tests had comparable results in predicting UTI.
- Clinical decisions based on dipstick urine and sediment analysis could be both time and cost effective and may reduce the need for the conventional urine culture.

Word cloud featuring the word "thank you" in multiple languages and scripts, including:

- English: thank you, thanks, thank you very much, thank you so much, thank you for everything, thank you for your help, thank you for your support, thank you for your contribution, thank you for your time, thank you for your attention, thank you for your interest, thank you for your participation, thank you for your presence, thank you for your input, thank you for your feedback, thank you for your suggestions, thank you for your comments, thank you for your ideas, thank you for your insights, thank you for your expertise, thank you for your knowledge, thank you for your skills, thank you for your talent, thank you for your passion, thank you for your dedication, thank you for your hard work, thank you for your perseverance, thank you for your resilience, thank you for your courage, thank you for your strength, thank you for your confidence, thank you for your faith, thank you for your hope, thank you for your love, thank you for your compassion, thank you for your kindness, thank you for your generosity, thank you for your hospitality, thank you for your warmth, thank you for your smile, thank you for your laughter, thank you for your tears, thank you for your joy, thank you for your peace, thank you for your happiness, thank you for your well-being, thank you for your health, thank you for your safety, thank you for your security, thank you for your comfort, thank you for your convenience, thank you for your ease, thank you for your simplicity, thank you for your clarity, thank you for your honesty, thank you for your integrity, thank you for your sincerity, thank you for your transparency, thank you for your accountability, thank you for your responsibility, thank you for your leadership, thank you for your guidance, thank you for your mentorship, thank you for your coaching, thank you for your encouragement, thank you for your inspiration, thank you for your motivation, thank you for your empowerment, thank you for your enablement, thank you for your facilitation, thank you for your assistance, thank you for your support, thank you for your advocacy, thank you for your representation, thank you for your protection, thank you for your defense, thank you for your advocacy, thank you for your representation, thank you for your protection, thank you for your defense.
- Russian: спасибо, благодарю, спасибо большое, спасибо очень, спасибо за все, спасибо за помощь, спасибо за поддержку, спасибо за вклад, спасибо за время, спасибо за внимание, спасибо за интерес, спасибо за участие, спасибо за присутствие, спасибо за input, спасибо за feedback, спасибо за suggestions, спасибо за comments, спасибо за ideas, спасибо за insights, спасибо за expertise, спасибо за knowledge, спасибо за skills, спасибо за talent, спасибо за passion, спасибо за dedication, спасибо за hard work, спасибо за perseverance, спасибо за resilience, спасибо за courage, спасибо за strength, спасибо за confidence, спасибо за faith, спасибо за hope, спасибо за love, спасибо за compassion, спасибо за kindness, спасибо за generosity, спасибо за hospitality, спасибо за warmth, спасибо за smile, спасибо за laughter, спасибо за tears, спасибо за joy, спасибо за peace, спасибо за happiness, спасибо за well-being, спасибо за health, спасибо за safety, спасибо за security, спасибо за comfort, спасибо за convenience, спасибо за ease, спасибо за simplicity, спасибо за clarity, спасибо за honesty, спасибо за integrity, спасибо за sincerity, спасибо за transparency, спасибо за accountability, спасибо за responsibility, спасибо за leadership, спасибо за guidance, спасибо за mentorship, спасибо за coaching, спасибо за encouragement, спасибо за inspiration, спасибо за motivation, спасибо за empowerment, спасибо за enablement, спасибо за facilitation, спасибо за assistance, спасибо за support, спасибо за advocacy, спасибо за representation, спасибо за protection, спасибо за defense.
- Chinese: 谢谢, 感谢, 感谢的话, 感谢之情, 感谢之意, 感谢之心, 感谢之诚, 感谢之德, 感谢之业, 感谢之功, 感谢之名, 感谢之实, 感谢之果, 感谢之报, 感谢之应, 感谢之效, 感谢之验, 感谢之证, 感谢之据, 感谢之理, 感谢之据, 感谢之理, 感谢之据, 感谢之理.
- Japanese: ありがとうございます, 感謝, 感謝状, 感謝状の書き方, 感謝状の書き出し, 感謝状の結び, 感謝状の文例, 感謝状の書き方, 感謝状の書き出し, 感謝状の結び, 感謝状の文例.
- Other languages: danke, teşekkür ederim, gracias, obrigado, sukriya, kop khun krap, takki, arigatō, dakujem, merci, ngiyabonga, mersi, barka, welalin, tacc, dank je, misaotra, matondo, paldies, grazzi, maibalo, tapadh leat, хвала, asante, manana, obrigada, tenki, djiere dieuf, tau, mochchakkeram, mamnun, chikran, murakoze, chnorakaloutioun, gracias ago, gracies, sulpay, go raibh maith agat, najis tuke, terima kasih, tanemirt rahmet, grazie, diolch, dhanyavadagalu, shukriya, merce, мерси, kam sah hammida, rahmat, তোসাকে শন্যবাদ, 감사합니다, xiexie, euχαριστώ, diolch, dhanyavadagalu, shukriya, merce, мерси, kam sah hammida, rahmat, তোসাকে শন্যবাদ, 감사합니다, xiexie, euχαριστώ.