

# Urinalisis sebagai uji diagnostik infeksi saluran kemih pada anak berusia 2 bulan hingga 2 tahun dengan gejala demam = Urinalysis as diagnostic tool for urinary tract infection in children aged 2 months 2 years old with febrile as the main symptom / Ayijati Khairina

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## Abstrak

### <b>ABSTRACT</b><br>

Latar belakang. Anak berusia 2 bulan - 2 tahun yang menderita infeksi saluran kemih (ISK) dengan gejala demam perlu mendapat perhatian karena memiliki risiko kerusakan ginjal, gejala klinis yang tidak spesifik pada traktus urinarius, serta pengambilan sampel urin yang sulit. Urinalisis merupakan pemeriksaan penunjang utama pada ISK karena cepat dan tersedia secara luas.

Tujuan. Penelitian ini bertujuan menilai sensitivitas, spesifisitas, nilai duga positif (NDP), nilai duga negatif (NDN), pretest odds, rasio kemungkinan positif (RKP), rasio kemungkinan negatif (RKN), post-test odds, dan post-test probability dari masing-masing komponen urinalisis, yaitu nitrit, esterase leukosit (EL), leukosituria, bakteriuria beserta gabungannya untuk memprediksi ISK pada anak berusia 2 bulan hingga 2 tahun dengan gejala demam.

Metode. Penelitian ini merupakan uji diagnostik yang dilakukan di RSCM, RSUD Tangerang, RSUP Fatmawati, dan RSUD Budhi Asih pada anak berusia 2 bulan - 2 tahun. Kriteria inklusi meliputi pasien dengan kecurigaan ISK, yaitu demam dengan suhu lebih dari, atau sama dengan 39°C, demam lebih dari 2 hari, dan tidak ditemukan penyebab lain (infeksi saluran pernapasan akut, otitis media akut, infeksi sistem saraf pusat, dan campak), serta belum mendapat antibiotik dalam 1 minggu terakhir. Kriteria eksklusi meliputi pasien immunocompromise dan kelainan anatomis pada traktus urinarius. Pengumpulan sampel urin untuk pemeriksaan urinalisis dan kultur urin menggunakan urine collector.

Hasil. Tujuh puluh lima anak ISK dengan gejala demam memenuhi kriteria penelitian. Prevalens ISK pada penelitian ini adalah 33%. Hasil positif pada nitrit, EL, leukosituria, bakteri, dan gabungannya memiliki nilai sensitivitas berturut-turut 24%, 68%, 56%, 52%, dan 54%. Nilai spesifisitas nitrit, EL, leukosituria, bakteri, dan gabungannya berturut-turut 94%, 80%, 86%, 90%, dan 95%. Nilai NDP nitrit, EL, leukosituria, bakteri, dan gabungannya berturut-turut 66%, 63%, 66%, 72%, dan 75%. Nilai NDN nitrit, EL, leukosituria, bakteri, dan gabungannya berturut-turut 71%, 83%, 79%, 79%, dan 88%. Nilai RKP nitrit, EL, leukosituria, bakteri, dan gabungannya berturut-turut 4; 3,4; 4; 5,2; dan 10,3. Nilai RKN nitrit, EL, leukosituria, bakteri, dan gabungannya berturut-turut 0,8; 0,4; 0,5; 0,5; dan 0,5.

Simpulan. Hasil gabungan komponen urinalisis (nitrit, EL, leukosituria, dan

bakteriuria) dapat digunakan untuk menyingkirkan ISK karena mempunyai spesifisitas dan NDN tinggi, sehingga tidak diperlukan pemeriksaan kultur urin.

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## <b>ABSTRACT</b><br>

**Background.** Children aged 2 months to 2 years old with febrile urinary tract infection (UTI) need special attention considering kidney complications, unspecified symptoms, and difficult urine sample collection. Urinalysis was the main supportive examination for UTI because of its immediate result and widespread availability.

**Objective.** To estimate sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV), pretest odds, positive likelihood ratio (LR+), negative likelihood ratio (LR-), post-test odds, and post-test probability on each urinalysis component, which are nitrite, leukocyte esterase (LE), leukocyturia, and bacteriuria, and also combination of all four components in predicting UTI among children aged 2 months to 2 years old with febrile as the main manifestations.

**Methods.** This is a diagnostic study held in Cipto Mangunkusumo Hospital, Tangerang Hospital, Fatmawati Hospital, and Budhi Asih Hospital, involving children aged 2 months to 2 years old. Inclusion criteria are fever with unknown source (more than or 39°C), fever more than 2 days (without acute respiratory infection, acute otitis media, central nervous system infection, or measles), and no history of antimicrobial consumption in the past week. Exclusion criteria are immunocompromised state and urinary tract abnormalities. Urine samples for urinalysis and urine culture were collected using urine collector for all subjects.

**Results.** Seventy five children were participating in this study. We found 33% prevalence of febrile UTI in this study. Sensitivity of nitrite, LE, bacteriuria, leucocyturia, and all four components were 24%, 68%, 56%, 52%, and 54%. The specificity of nitrite, LE, bacteriuria, leucocyturia, and all four components were 94%, 80%, 86%, 90%, and 95%. The PPV of nitrite, LE, bacteriuria, leucocyturia, and all four components were 66%, 63%, 66%, 72%, and 75%. The NPV of nitrite, LE, bacteriuria, leucocyturia, and all four components were 71%, 83%, 79%, 79%, and 88%. The LR+ of nitrite, LE, bacteriuria, leucocyturia, and all four components were 4; 3,4; 4; 5,2; and 10,3. The LR- of nitrite, LE, bacteriuria, leucocyturia, and all four components were 0,8; 0,4; 0,5; 0,5; and 0,5.

**Summary.** All four components of urinalysis (nitrite, LE, leucocyturia, and bacteriuria) can be used to exclude UTI because of their high specificity and NPV, so urinary culture is not needed.