Penilaian sensitivitas dan spesifisitas rapid diagnostic test (RDT) dengan baku emas slide darah mikroskop untuk deteksi dini malaria dalam kehamilan

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Abstrak

Tujuan: Mengetahui sensitivitas dan spesifisitas Rapid Diagnostic Test (RDT) dengan baku emas slide darah mikroskop untuk deteksi dini malaria dalam kehamilan.
Tempat: Puskesmas dan Puskesmas Pembantu di kecamatan Sei Berombang, kabupaten Labuhan Baku, Sumatera Utara (daerah endemik malaria).
Bahan dan Cara Kerja: Penelitian ini merupakan uji diagnostik yang bersifat sesaat (cross sectional). Wanita hamil atau dalam masa nifas yang berdomisili di daerah endemik malaria tersebut diminta kesediaannya untuk mengikuti penelitian ini. Anamnesis, pemeriksaan lisik dan Obstetrik dilakukan sesuai dengan protokol penelitian. Kemudian diambil sampel darah tepi masing-masing untuk pemeriksaan RDT (Parascreen®, produksi Zephyr Biomedicals, India, ML No: 558, Lot No: 101017), dan slide darah mikroskop. Pembacaan slide darah mikroskop dilakukan di laboratorium Sub Dit. Malaria Depkes Ri, Jakarta, oleh mikroskopis nasional. Data yang didapatkan kemudian diolah dan dianalisa.
Hasil: Pengambilan sampel dilakukan pada 18 Agustus 2006. Diteliti 45 subyek penelitian yang memenuhi kriteria penerimaan dan penolakan. Didapatkan usia populasi penelitian berkisar antara 18-38 tahun dengan kelompok usia terbanyak (48,9%) usia 20-39 tahun. Sebagian besar (93,3%) tingkat pendidikan peserta penelitian adalah rendah. Penghasilan peserta penelitian sebanyak (86,7%) di bawah Rp.1.000.000,00, hal ini sesuai dengan pendapat yang menyatakan eratnya hubungan antara malaria dan kemiskinan. Tidak ada satu pun responden yang demam namun pemeriksaan mikroskopik menunjukkan ada 5 wanita hamil yang positif parasit malarianya dan semuanya tidak terdeteksi dengan RDT sehingga didapatkan nilai sensitivitas dan spesifisitas alat RDT masing-masing 0% dan 100% untuk deteksi dini malaria dalam kehamilan. Nilai duga positif 0%, nilai duga negatif 91,1%, rasio kemungkinan positif 0, rasio kemungkinan negatif 1, dan nilai kappa O. Prevalensi malaria dalam kehamilan pada wanita hamil asimptomatik pada penelitian ini didapatkan 11,1%. Distribusi jenis malaria terbanyak adalah P falciparum (60%), dengan jumlah parasit malaria 79-2381 µL. Populasi penelitian adalah ibu hamil dan nifas dengan distribusi kelompok terbesar pada usia gestasi trimester 3 (57,8%). Sebagian besar populasi (64,4%) merupakan primigravida atau hamil ke-2.
Kesimpulan: Penelitian ini menunjukkan RDT yang dipakai tidak akurat untuk deteksi dini malaria dalam kehamilan. Prevalensi malaria dalam kehamilan pada wanita hamil asimptomatik di daerah endemik malaria pada penelitian ini adalah 11,1%. Pemeriksaan slide darah mikroskop masih merupakan baku emas untuk deteksi dini malaria dalam kehamilan. Jumlah parasit malaria pada wainta hamil asimptomatik termasuk rendah.
Saran: Deteksi dini malaria dalam kehamilan perlu dilakukan pada wanita hamil di daerah endemik malaria. Dengan masih terbatasnya tenaga mikroskopis terlatih dan perlengkapan di daerah pedalaman, ROT merupakan alternatif untuk deteksi dini malaria dalam kehamilan namun perlu dilakukan penelitian lebih lanjut di lapangan dengan jumlah sampel yang lebih besar dan menggunakan jenis RDT lainnya sehingga dapat ditentukan RDT yang lebih layak.

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Objective: To know the sensitivity and specificity of the rapid diagnostic test (RDT) for early detection of malaria during pregnancy with the microscopic slide as the gold standard.
Venue: Public Health Facility located in Sei Berombang district, Labuhan Batu county, North Sumatra province.
Methods and Materials: Cross sectional diagnostic test. Pregnant or puerperal women who live in that location were asked to participate in this study. Anamnesis, physical and obstetrical examination were performed according to the protocol of the study. Peripheral blood from each participants for RDT (Parascreen®, produced by Zephyr Biomedicals, India, ML No: 558, Lot No: 101017), and microscopic slide examination obtained. Microscopic slides were read by national microscopist in the laboratory of Sub Dit Malaria Indonesia Republic Department of Health in Jakarta. The data then collected and analyzed.
Results: The sample was taken on August 18th 2006. There were 45 samples that met the inclusion and exclusion criteria. The age of the participants were between 18-38 years old, and the majority (48,9%) were in the 20-39 years old group. For the level of formal education, the majority (93,3%) were in the low level group. Most of the participants (86,7%) had the average income below Rp.1.000.000,00 per month. This condition supports the theory that suggests the strong correlation between poverty and malaria. None of the participants complaining of fever, from the microscopic examination, there were 5 pregnant women positive for parasitemia and none of them could be detected by the RDT, so the sensitivity and the specificity of the RDT was 0% and 100% respectively for early detection of malaria during pregnancy. The positive predictive value was 0%, the negative predictive value was 91,1%, the positive probability ratio 0, the negative probability ratio 1, and the kappa value was O. The prevalence of malaria during pregnancy among the asimptomatic pregnant women in this study was 11,1%. Most of the species (60%) was P falciparum with the parasite count ranging from 79-238l µL. This study population was pregnant and puerperal women with the majority were on the 3rd trimester. Most of the population (64,4%) were primi or 2nd gravidae.
Conclusion: This study shows that the RDT used were inaccurate for early detection of malaria during pregnancy. The prevalence of malaria during pregnancy among the asimptomalic pregnant women living in the endemic malaria area in this study was 11,1%. The microscopic blood slide remains the golden standard for early detection of malaria during pregnancy. The parasite count in the asimptomatic women with malaria during pregnancy was low.
Suggestion: Early detection for malaria during pregnancy should be performed for pregnant women living in the endemic area. Because of the limited trained microscopist and facility in the remote area, RDT could be an alternative for early detection of malaria during pregnancy, but further study with larger samples and using variety of RDTs should be performed, so that the ideal RDT for early detection of malaria during pregnancy could be established.