Gallbladder wall thickening for early detection of plasma leakage in dengue infected adult patients

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Abstrak

Background: plasma leakage is defined as ?20% elevation of hematocrit from baseline or decrease in convalescence or evidence of plasma leakage such as pleural effusion, ascites or hypoproteinaemia/hypoalbuminaemia. These signs of plasma leakage, in the early phase, are usually difficult to ascertain by physical examination and laboratory tests where the patient is only reflecting a mild degree of plasma leakage. This study aimed to investigate whether gallbladder wall thickening (GBWT) in the early phase of the disease can be used to detect the occurrence of plasma leakage in dengue patients. Methods: a diagnostic study was conducted among dengue patients. Patients with fever less than 3 days, positive results of non-structural protein 1 antigen dengue and RT-PCR examination were included consecutively. Laboratory tests and chest and abdominal ultrasonography examination were also performed daily from day-3 to day-7 of fever to confirm the occurrence of plasma leakage using WHO 1997 criteria during treatment. Results: there were 69 patients included in this study. Male patients were found more frequently (52.2%), average age was 24.2 years, and 46 patients (66.7%) presented with secondary dengue infection. On the third day of fever, 37 patients presented with GBWT, 30 of which showed plasma leakage during treatment. Out of 46 patients found to have plasma leakage during treatment, 12 patients had presented with plasma leakage on the third day of fever. Sensitivity and specificity of GBWT on the third day of fever were 65% (95% CI: 0,51-0,79) and 70% (95% CI: 0.51-0.88); PPV and NPV were 81% (95% CI: 0.68-0.94) and 50% (95% CI: 0.33-0.67); LR (+) and LR (-) were 2.14 (95% CI: 1.12-4.12) and 0.5 (95% CI: 0.31-0.81), respectively. Conclusion: gallbladder wall thickening in the early phase of the disease can be used to detect the occurrence of plasma leakage in adult dengue infected patients.
.....Latar belakang: kebocoran plasma didefinisikan sebagai peningkatan hematokrit 20% dari baseline atau penurunan pemulihan atau bukti kebocoran plasma seperti efusi pleura, asites atau hypoproteinaemia/hypoalbuminaemia. Tanda-tanda kebocoran plasma ini, pada fase awal, biasanya sulit untuk dipastikan dengan pemeriksaan fisik dan tes laboratorium di mana pasien hanya mencerminkan tingkat ringan kebocoran plasma. Penelitian ini bertujuan menentukan peran penebalan dinding kandung empedu dalam mendeteksi kebocoran plasma pada fase awal infeksi dengue. Metode: penelitian ini adalah suatu studi diagnostik yang dilakukan pada pasien dengue yang mengalami demam kurang dari tiga hari dengan hasil uji non-structural protein 1 antigen dengue dan RT-PCR positif. Pemeriksaan laboratorium dan USG toraks dan abdomen dilakukan setiap hari mulai hari ke-3 hingga hari ke-7 demam untuk melihat adanya penebalan dinding kandung empedu dan kebocoran plasma berdasarkan kriteria WHO 1997 selama perawatan. Hasil: dari 69 subyek penelitian yang didapat, 52,2% adalah laki-laki, rerata usia 24,2 tahun, dan 46 pasien (66,7%) mengalami infeksi dengue sekunder. Pada hari ketiga demam, terdapat 37 pasien dengan penebalan dinding kandung empedu dan 30 di antaranya terbukti mengalami kebocoran plasma selama perawatan. Dari 46 pasien yang mengalami kebocoran plasma, 12 di antaranya sudah menunjukkan kebocoran plasma sejak hari ketiga demam. Penebalan dinding kandung empedu pada demam hari ketiga

memiliki nilai sensitivitas dan spesifisitas sebesar 65% (IK 95%: 0,51-0,79) dan 70% (IK 95%: 0,51-0,88); nilai duga positif dan nilai duga negatif sebesar 81% (IK 95%: 0,68-0,94) dan 50% (IK 95%: 0,33-0,67); rasio kemungkinan positif dan negatif sebesar 2,14 (IK 95%: 1,12-4,12) dan 0,5 (IK 95%: 0,31-0,81). Kesimpulan: penebalan dinding kandung empedu dapat dipergunakan untuk mendeteksi adanya kebocoran plasma pada fase awal infeksi dengue.