

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

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Deskripsi Lengkap: <https://lib.ui.ac.id/detail?id=20497872&lokasi=lokal>

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### Abstrak

Background: plasma leakage is defined as  $\geq 20\%$  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.