

OP 24 - Rational use of ultrasonography with triaging of patients to detect dengue plasma leakage in resource limited settings: a prospective cohort study

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Introduction: The study aimed to compare the traditional haematocrit based criteria (>20% rise above baseline) against ultrasonography for diagnosing plasma leakage in dengue fever and to identify clinical indicators for triaging patients in resource limited settings, when the demand for ultrasonography is high.

Methods: Colombo Dengue Study is a prospective observational cohort study recruiting dengue patients in the first three days of dengue fever, before plasma leakage. Serial hematocrit assessments and ultrasonography were performed in patients recruited from October 2017 to February 2020. Clinical signs/symptoms and laboratory investigation results independently associated with ultrasound detected plasma leakage were identified with a derivation cohort and confirmed in a validation cohort. Ethics approval for the study was obtained from Ethics review committees of Faculty of Medicine, University of Colombo (EC/17/080) and National Hospital of Sri Lanka (ETH/COM/2017/12).

Results: Out of 426 dengue patients, 129 patients had ultrasonography confirmed plasma leakage while 146 had a hematocrit rise >20%. Those positive on ultrasonography were also likely to fulfill the haematocrit based criteria (OR: 4.42, 95% CI: 2.85 – 6.86), but the two groups did not overlap fully. In the derivation cohort (n=317), platelet count <97,000/ μ l, AST/ALT > 51 IU/L and having abdominal pain in the first three days of fever were independent predictors of ultrasound detected plasma leakage. In the validation cohort (n=109), the combination of a low platelet count and a high aminotransferase level had better predictive capacity in terms of sensitivity and specificity.

Conclusion: Ultrasonography is a useful tool to identify plasma leakage in dengue, otherwise missed by haematocrit based criterion. If accessibility to scans are limited, bedside clinical indicators can be used to triage patients.

Keywords: Ultrasonography, plasma leakage, dengue, triage, haematocrit rise

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