



ULTRASONOGRAPHIC AND PORTAL DOPPLER EVALUATION OF CAPILLARY LEAK SYNDROME IN DENGUE FEVER PATIENTS

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KEYWORDS :

INTRODUCTION

Dengue fever is a significant public health challenge, with increasing outbreaks due to urbanization and climate change.

Severe cases can lead to **Capillary Leak Syndrome (CLS)**, which contributes to **Dengue Hemorrhagic Fever (DHF)** and **Dengue Shock Syndrome (DSS)**. Early detection of CLS is crucial for effective management.

Aim & Objectives

1. Assess **ultrasonographic features** of CLS in dengue patients.
2. Evaluate the **predictive value of portal vein Doppler studies** in detecting CLS.
3. Correlate **Doppler findings** with clinical and laboratory parameters.

Methodology

- **Study Type:** Prospective observational study
- **Location:** Konaseema Institute of Medical Sciences, India
- **Duration:** April 2022 – March 2024
- **Sample Size:** 100 patients with confirmed dengue (NS1/IgM positive, thrombocytopenia)

Exclusion Criteria:

- Asymptomatic dengue patients
- Chronic liver disease
- Portal vein thrombosis
- Patients who declined consent

Data Collection:

- Ultrasound and Doppler imaging
- Platelet count and hemoglobin levels

Key Findings

Sample case

- A 45-year-old male presented with complaints of high-grade fever for 6 days
- Laboratory investigations revealed a reduced platelet count of 66000.
- Portal venous Doppler was done at the time of admission.

Fig 12: Gray scale USG subcostal oblique sonogram shows increased GB wall thickness of 8.0 mm.

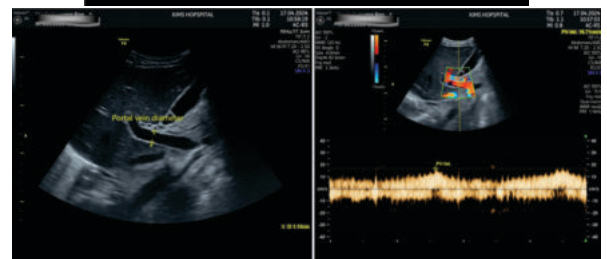


Fig13,14: Normal portal vein flow , Normal hepatopetal flow pattern and respirophasic variation, and the flow velocity is 16.7 cm/sec, Portal vein diameter measuring 1.15cm

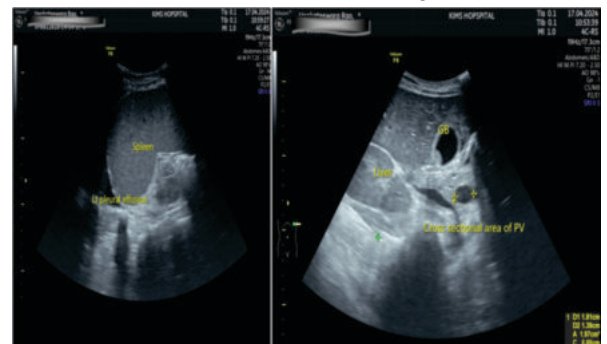


Fig15,16: Gray-scale images show left sided pleural effusion and the cross-sectional area of the portal vein, which is 1.9 cm², along with GB sludge.

The patient has no ascites; on follow, the patient developed CLS.

Ultrasonographic Features of CLS

Feature	Frequenc y (%)	Sensiti vity	Specifi city
Gallbladder (GB) wall edema	66%	70.7%	55.5%
Ascites	36%	41.4%	88.8%
Pleural effusion	48%	56.1%	88.8%

Portal Doppler Parameters

Parameter	Cutoff Value	Sensiti vity	Speci ficity
Portal vein diameter	>11mm	96%	73%
Portal vein cross-sectional area	>1.2 cm ²	95%	77%
Portal vein velocity	<25 cm/sec	98%	94%

Correlations

- **Lower platelet counts** were associated with an increased risk of CLS.
- **Higher hemoglobin levels (>12.5 g/dL)** correlated with CLS development.
- **Portal Doppler parameters** had **higher sensitivity and specificity** than ultrasound alone.

CONCLUSION

The combination of ultrasonography and portal venous Doppler enhances diagnostic accuracy in predicting Capillary Leak Syndrome (CLS) in dengue patients. Portal vein velocity (<25 cm/sec) was the most reliable predictor. Early detection through Doppler imaging can aid in timely interventions, reducing the progression to severe dengue complications

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