

# Hepatic Encephalopathy— the Old and the New



Prem A. Kandiah, MD<sup>a,\*</sup>, Gagan Kumar, MD, MA<sup>b</sup>

## KEYWORDS

- Hepatic encephalopathy • Acute liver failure • Fulminant hepatic failure
- Chronic liver failure • Acute-on-chronic liver failure

## KEY POINTS

- An elevated plasma ammonia level (>150  $\mu\text{mol/L}$ ) in acute liver failure increases the risk of intracranial hypertension; however, a low level (<146  $\mu\text{mol/L}$ ) does not preclude it when associated with multiorgan failure.
- Acute-on-chronic liver failure patients admitted with overt hepatic encephalopathy have a significantly higher short-term mortality rate and small but devastating risk of brain herniation (4%) and are at an increased risk of intracranial hemorrhage (16%).
- Brain MRI pattern of restricted diffusion (cytotoxic edema) in hyperammonemia associated with urea cycle disorder or liver failure correlates in severity with plasma ammonia levels and clinical outcome.
- Therapeutic hypothermia is safe but does not confer a clear mortality benefit in acute liver failure.
- Invasive intracranial pressure monitoring used in an estimate of 20% to 30% of patients with acute liver failure in North America yields a 2.5% to 10% risk of intracranial hemorrhage with unproven benefit.
- Molecular adsorbent recirculating system and embolization of large spontaneous portosystemic shunting may facilitate improvement in grade of hepatic encephalopathy safely but without a proven mortality benefit.

## INTRODUCTION

Hepatic encephalopathy (HE) represents brain dysfunction directly caused by liver insufficiency or portosystemic shunting (PSS) that manifests as a wide spectrum of neurologic and psychiatric deficits ranging from subclinical deficits to coma.

---

No commercial or financial conflict of interest and funding.

<sup>a</sup> Division of Neuro Critical Care, Department of Neurosurgery, Co-appointment in Surgical Critical Care, Emory University Hospital, 1364 Clifton Road Northeast, 2nd Floor, 2D ICU-D264, Atlanta, GA 30322, USA; <sup>b</sup> Department of Critical Care, Phoebe Putney Memorial Hospital, 417 Third Avenue, Albany, GA 31701, USA

\* Corresponding author.

E-mail address: [prem.kandiah@emoryhealthcare.org](mailto:prem.kandiah@emoryhealthcare.org)

Crit Care Clin 32 (2016) 311–329

<http://dx.doi.org/10.1016/j.ccc.2016.03.001>

[criticalcare.theclinics.com](http://criticalcare.theclinics.com)

0749-0704/16/\$ – see front matter © 2016 Elsevier Inc. All rights reserved.

## CLASSIFICATION OF HEPATIC ENCEPHALOPATHY

To capture the complexity and breadth of HE, the recent 2014 combined European Association of the Study of the Liver and the American Association for the Study of Liver Diseases guidelines have integrated 4 characteristic factors into the classification of HE (**Table 1**): (1) underlying disease, (2) severity of manifestation, (3) time course, and (4) precipitating factors. Severity of manifestation was adapted from West Haven criteria<sup>1</sup> and merged with 3 newer definitions, minimal HE, covert HE, and overt HE. For the purpose of this critical care review, the focus is limited on overt HE (types A and C).

Classification of HE	Subclassification of HE	Defining Feature and Description	
1. Underlying disease <sup>a</sup>	Type A	Acute Liver Failure	
	Type B	Portal-systemic Bypass without intrinsic hepato-cellular damage	
	Type C	Cirrhosis and portal hypertension with portal-systemic shunts	
2. Severity of Manifestation <sup>b</sup>	Grade 0	No HE	No HE
	Grade I	Psychometric or neuropsychological alterations without clinical evidence of mental change	Minimal HE or covert
		Trivial lack of awareness Euphoria or anxiety Shortened attention span Impairment of addition or subtraction	Covert
	Grade II	Altered sleep rhythm	Overt
Lethargy or apathy Disorientation for time Obvious personality change Inappropriate behavior Dyspraxia Asterixis			
Grade III	Somnolence to semistupor	Overt	
	Responsive to stimuli Confused Gross disorientation Bizarre behavior		
Grade IV	Coma		
3. Time course of presentation	Episodic	Single or episodes occurring >6 mo	
	Recurrent	Episodes occur <6 mo	
	Persistent	Behavioral alterations that are always present and interspersed with relapses of overt HE.	
4. Precipitating factors	None	—	
	Precipitated	Precipitating factors can be identified in nearly all bouts of episodic HE type C and should be actively sought and treated when found	

<sup>a</sup> European Association of the Study of the Liver and the American Association for the Study of Liver Diseases Hepatic encephalopathy Guidelines.<sup>2</sup>

<sup>b</sup> Adapted from Ferenci P, Lockwood A, Mullen K, et al. Hepatic encephalopathy—definition, nomenclature, diagnosis, and quantification: final report of the working party at the 11th World Congresses of Gastroenterology, Vienna, 1998. *Hepatology* 2002;35(3):716–21.

Download English Version:

<https://daneshyari.com/en/article/3108061>

Download Persian Version:

<https://daneshyari.com/article/3108061>

[Daneshyari.com](https://daneshyari.com)