

First Author, Journal (year)	Country	Study design	Characteristics of patients	HE classify	Proportion of HE (HE/All)	Length of follow-up	Results of univariate analysis	Results of multivariate analysis
ALB level as a variable								
Zhang, <i>Archives of medical science</i> (2016)	China	Cross-sectional	Liver cirrhosis	Minimal HE	43.3% (26/60)	N/A	Small intestinal bacterial overgrowth, Age, Education, NCT-A, NCT-BC, ALB, PT, Ammonia	Age, Education, ALB, Ammonia, Small intestinal bacterial overgrowth
Greinert, <i>Zeitschrift fur Gastroenterologie</i> (2018)	Germany	Cross-sectional	Liver cirrhosis	Covert HE	59.8% (70/117)	N/A	Child-Pugh score, MELD score, TBIL, Scr, Na, AST, ALB, PSE, Critical flicker frequency	NA
Bhanji, <i>Hepatology international</i> (2018)	Canada	Cross-sectional	Liver cirrhosis	Overt HE	19.0% (128/675)	N/A	Alcohol cirrhosis, Na, MELD score, Ascites, Sarcopenia	Na, MELD score, Ascites, Sarcopenia
Bale, <i>Journal of clinical and experimental hepatology</i> (2018)	India	Cross-sectional	Liver cirrhosis	Minimal HE	52.2% (94/180)	N/A	TBIL, AST, ALB, INR, Child-Pugh score, MELD score	Child-Pugh score
Nardelli, <i>Hepatology</i> (2018)	Italy	Prospective cohort	Liver cirrhosis	Covert HE	42.3% (131/310)	14.1 months	Child-Pugh score, MELD score, Previous HE, Ascites, Decompensated cirrhosis, PPIs, ALB, Na, Animal naming test	PPI, Previous HE, Na, ALB, Age, MELD score
Tapper, <i>Hepatology</i> (2018)	USA	Retrospective cohort	Liver cirrhosis	Overt HE	43.6% (863/1979)	5 years	Ascites, Paracentesis, TBIL, ALB, Na, Opiate, Beta-blocker, Statin	TBIL, ALB, Beta-blocker, Statin
Labenz, <i>The American journal of gastroenterology</i> (2019)	Germany	Prospective cohort	Liver cirrhosis	Covert HE	38.2% (91/238)	6 months	Outpatient, History of ascites, Clinically detectable ascites, History of overt HE, S-ANT1 score, TBIL, ALB, INR, Fatigue, Systemic symptoms, Activity, Emotional function, Worries	Clinically detectable ascites, History of overt HE, S-ANT1, ALB, Activity subdomain of the CLDQ
Hanai, <i>Journal of gastroenterology and hepatology</i> (2019)	Japan	Retrospective cohort	Liver cirrhosis	Minimal HE	20.8% (56/269)	N/A	HCC, Child-Pugh score, MELD score, TBIL, ALB, INR, Ammonia, Branched-chain amino acids/Tyrosine	NA
Current study	China	Retrospective cohort	Liver cirrhosis	Overt HE	4.8% (113/2376)	In hospitalizations	Age, Ascites, AUGIB, Infection, Hb, WBC, TBIL, ALB, AST, BUN, Scr, K, Na, Ammonia, PT, APTT, Child-Pugh score, MELD score	Age, Infection, ALB, Ammonia, PT
ALB level not as a variable								
Guevara, <i>The American journal of gastroenterology</i> (2009)	Spain	Prospective cohort	Liver cirrhosis	Overt HE	45.9% (28/61)	1 year	Hyponatremia, Na, TBIL, Scr, Diuretic	Hyponatremia, TBIL, Scr, Earlier HE
Guevara, <i>Liver international</i> (2010)	Spain	Retrospective cohort	Liver cirrhosis and refractory ascites	Overt HE	38.6% (27/70)	1 year	Hyponatremia, Na, TBIL, Scr, Age	Hyponatremia, Scr, TBIL
Kobtan, <i>Biological trace element research</i> (2016) #	Egypt	Cross-sectional	Liver cirrhosis	Overt HE	62.5% (50/80)	N/A	Serum manganese level	
Yuan, <i>PloS one</i> (2018)	China (Taiwan)	Case-control	Liver cirrhosis	Overt HE	N/A	N/A	SBP, Sepsis, Biliary tract infection	NA
Yousif, <i>Internal and emergency medicine</i> (2019) #	Egypt	Prospective cohort	HCV related liver cirrhosis	Overt HE	33.3% (45/135)	N/A	Vitamin D	

Supplementary Table 1. Predictors for development of HE.

Note: #: It is not clear whether this study is univariate or multivariate analysis.

Abbreviations: HE: hepatic encephalopathy; TBIL: Total Bilirubin; AST: Aspartate amino Transferase; ALB: Albumin; MELD: Model for End-stage Liver Disease; Na: Sodium; S-ANT: Simplified Animal Naming Test; INR: International Normalized Ratio; CLDQ: Chronic Liver Disease Questionnaire; HCC: Hepatocellular Carcinoma; HCV: Hepatic C Virus; AUGIB: Acute Upper Gastrointestinal Bleeding; Scr: Serum Creatinine; K: Potassium; SBP: Spontaneous Bacterial Peritonitis; PT: Prothrombin Time; APTT: Activated Partial Thromboplastin Time; PSE: Portosystemic Encephalopathy Syndrome test; NCT: Number Connection Test; N/A: Not Applicable; NA: Not Available.