

No conflict of interest related
to this presentation

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Extra-hepatic manifestations associated with Hepatitis E Virus

Manifestation	Type	
Acute pancreatitis		
Neurological	Central nervous system diseases	Meningitis - encephalitis - meningoencephalitis Ataxia Pyramidal syndrome Pseudotumor cerebri Acute transverse myelitis
	Peripheral nervous system diseases	Guillain-Barre syndrome Neuralgic amyotrophy Cranial nerve diseases: Bell palsy - oculomotor palsy
Musculoskeletal	Necrotizing myositis Pyomyositis	
Hematological	Hemolytic anemia	G6PD deficiency
	Aplastic anemia	Auto-immune
	Pure red-cell aplasia	
	Severe thrombocytopenia	
	Hemophagocytic syndrome	
Renal	MGUS	
	Decreased eGFR	Membranous glomerulonephritis
	Glomerulonephritis ± cryoglobulinemia	Membranoproliferative glomerulonephritis IgA nephropathy Nephroangiosclerosis
Other immune-mediated	Thyroiditis	
	Myocarditis	
	Henoch-Schönlein purpura	
	Myasthenia gravis	

eGFR = estimated glomerular filtration rate; G6PD = glucose-6-phosphate dehydrogenase; MGUS = monoclonal gammopathy of uncertain significance

Extra-hepatic manifestations associated with Hepatitis E Virus

✓ Renal injury include membranoproliferative glomerulonephritis with or without cryoglobulinemia, membranous glomerulonephritis and tubular necrosis

Kamar, AJKD 05 ; Kamar, Am J Transplant 11 ; Kamar, Transplantation 12

→ Cryoglobulinemia

- Immunosuppressed patients: TH, arthralgia, rash and renal failure



- Not: F...yo

Pishke, Lancet Infect Dis, 15

Guinaut, Am J Kidney Dis, 16

✓ Others: Severe thrombocytopenia, hemolytic anemia due to glucose phosphate dehydrogenase deficiency...

Colson, J Clin Microbiol 08 ; Fouquet, J Clin Virol 10 ; Deniel, J Clin Virol 11

Manifestations extrahépatiques

✓ Neurological Disorders

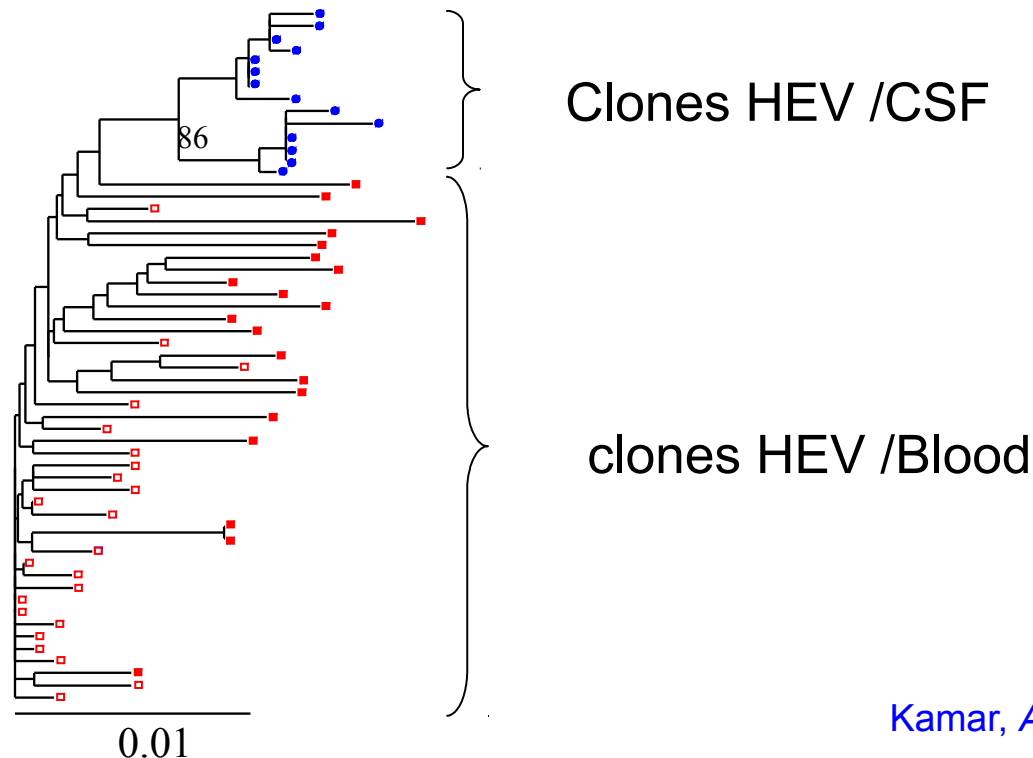
→ Guillain-Barré, Parsonage-Turner, multinevritis, ...

Kamar, *Am J Transplant* 10 ; Kamar, *Emerg Infect Dis* 11 ;

Maurissen, *Infection* 11 ; Despierres, *Emerg Infect Dis* 11 ;

Colson, *Clin Res Hepatol* 13 ; Geursvankessel, *Clin Infect Dis* 13 ;

van den Berg, *Neurology* 14 ; van Eijk, *Neurology* 14...



CNR Study in 2015 of HEV French autochtones cases

- ❖ Specification about origin of contamination

 - Case /control study

- ❖ Assessment of frequency and characteristic of extrahepatic manifestations

Preliminary data

- 200 /289 cases reported

	N
Age (mean± SD)	53 ± 13,8
Sex (male)	126 (63%)
immunocompromised *	63 (31.5%)

* Organ solid transplant HIV+, Chemotherapy and Biotherapy (MTX, anti-TNF...)

Neurological disorders

- 32 (16,5%) NRL confirmed cases

Pathologies identifiées	N (%)
Neurological pain	14 (44)
Sensitive paresthesia	9 (28)
Parsonage Turner	5 (16)
Guillain-barre Syndrome	1 (3)
Encephalitis	1 (3)
Meningitis	1 (3)
Diplopia	1 (3)

Others possible manifestations associated with HEV Virus ?

Authors/year	Country	Age /sex	HEV diagnosis /genotype	Manifestations	Treatment	Outcome
Thyroid diseases						
Hui 2003 [139]	Hong Kong, China	38/M	IgG-IgM/NT	Inactive HBsAg carrier, Grave's disease, fulminant hepatitis	Lithium, methimazole	Recovery
Kong 2006[138]	South Korea	34/F	IgG-IgM/NT	Subclinical hyperthyroidism	PTU	Recovery
Dumoulin 2012 [137]	South Korea	42/M	IgG-IgM/NT	Grave's disease	intractable to PTU	Recovery
Martinez-Artola 2015 [140]	Germany	NM/W	IgM/NT	Grave's disease	Carbimazol, radioiodine	Recovery
Inagaki 2015 [141]	Argentina	45/M	IgG-IgM/3a	Subacute thyroiditis	Supportive	Recovery
	Japan	65/F		Painless thyroiditis, severe hepatitis	Steroid	Recovery
Myocarditis						
Goyal 2009 [142]	India	21/M	IgM/NT	Dyspnea, hypotension, acidosis	Ventilation, steroids inotropic support,	Recovery
Dougherty 2012 [143]	USA	50/F	IgM/NT	Chest pain, palpitations, dyspnea	Indomethacin	Recovery
Premkumar 2015 [144]	India	26/M	IgM/NT	Acute kidney injury	Supportive, SLED	Recovery
Other manifestations						
Thapa 2010 [145]	India	6/F	IgM/NT	Schöenlein, Henoch purpura	Supportive	Recovery
Belbezier 2014 [146]	France	33/W	RNA/3f	Myasthenia gravis, anti musk+	prostigmine, IVIG, ribavirin	Recovery

IVIG: intravenous immunoglobulin; MuSK: muscle specific kinase; NT: not tested; PTU: propylthiouracil; SLED: slow low efficiency dialysis