

# Enterovirus-associated Hepatic Necrosis and Coagulopathy

Schelli Jaremczuk

Pathology West - Wagga

# Enterovirus (EV) Infections in Neonates

- 13% of neonates <1mo are infected with EV (Simonsen et al 2014)
- A small percentage lead to overwhelming systemic illness and death (Tzou-Yien et al 2003)
- Risk factors include (Tzou-Yien et al 2003)
  - Earlier age of onset (<7d)
  - Prematurity (<37/40)
  - Maternal History of viral just before or during birth
  - Lower haemoglobin (<107)
  - Higher white cell count (>15)

# EV-associated HNC

- Enterovirus-associated Hepatic Necrosis and Coagulopathy has a mortality rate of 24% (Hawkes and Vaudry 2005)
- Defined as (Hawkes and Vaundry 2005):
  - Serum transaminases greater than 3x normal
  - Platelets <100
  - PT greater than 2x the control value
  - Evidence of hepatic necrosis or extensive haemorrhage on autopsy

# Fatal Cases of EV-HNC

- Prematurity
- Shorter fever duration
- Higher WCC
- Lower Hb
- Higher total bilirubin
- Prolonged PT (>30s)
- Myocarditis

# Case of Interest

- On the 16<sup>th</sup> of August a 7 day old neonate presented to Emergency with the clinical notes “Hypothermia”

	15:07	15:47	17:09	20:59
WCC	19.5	17.1	17.3	14.2
Hb	143	132	<b>121</b>	<b>97</b>
Platelets	<b>19</b>	<b>12</b>	<b>13</b>	<b>51</b>
APTT		<b>148s</b>		93s
INR		<b>&gt;10</b>		5.8
D-dimer			<b>&gt;5.00</b>	
Fibrinogen			<b>&lt;0.6</b>	
Bilirubin	216	<b>205</b>		
ALT	Ins	<b>2,475</b>		
AST	Ins	<b>10,286</b>		
GGT	Ins	<b>133</b>		
Ferritin			<b>&gt;40,000</b>	
CRP	<b>7</b>	<b>7</b>		

# Diagnosis and Management

- Viral culture or PCR is the best way to confirm diagnosis (Hawkes and Vaudry 2005)
- IVIG and the antiviral agent Pleconaril are specific therapies (Hawkes and Vaudry 2005)
- Specific antiviral therapy for EV is in development (Abzug 2004)

# Follow up tests

	7/9	11/9	13/9	27/9
WCC	8.9		8.1	
Hb	<b>81</b>		<b>95</b>	
Platelets	<b>147</b>		289	
APTT	<b>53s</b>			<b>46</b>
INR	1.8	1.4		1.2
Bilirubin	108	<b>93</b>	<b>85</b>	<b>25</b>
ALT	<b>60</b>	<b>59</b>	<b>59</b>	<b>39</b>
AST	<b>131</b>	<b>115</b>	<b>114</b>	<b>46</b>
GGT	<b>62</b>	<b>88</b>	<b>113</b>	<b>105</b>
CRP		<3		



# References

- Abzug, M 2004. Presentation, diagnosis and management of enterovirus infections in neonates. *Paediatr Drugs* 6(1): 1-10.
- Abzug M, Levin M, Rotbart H 1993. Profile of Enterovirus Disease in the First Two Weeks of Life. *Pediatr Infect Dis J.* 12(10): 820-4
- Devictor D, Tissieres P, Durant P, Chevret L, Debray D 2011. Acute Liver Failure in Neonates, Infants and Children. *Expert Review of Gastroenterol Hepatol* 5(6): 717-729.
- Hawkes M and Vaudry W 2005. Nonpolio enterovirus infection in the neonate and young infant. *Paediatr Child Health* 10(7): 383-388
- Simonsen K, Anderson-Berry A, Delair S, Davies H 2014. Early-Onset Neonatal Sepsis. *Clin Microbiol* 27: 21-47.
- Tzou-Yien L, Hsiu-Tsun K, Shang-Hong H, Yhu-Chering H, Cheng-Hsun C, Yi-Hong C, Peng-Hong Y, Rey-In L, Kuo-Chien T, Kuang-Hung H and Luan-Yin C 2003. Neonatal Enterovirus Infections: Emphasis on Risk Factors of Severe and Fatal Infections. *Pediatr Infect Dis J* 22: 889-94.