

# Characterization of cell death after Periventricular Hemorrhagic Infarction in premature human neonates

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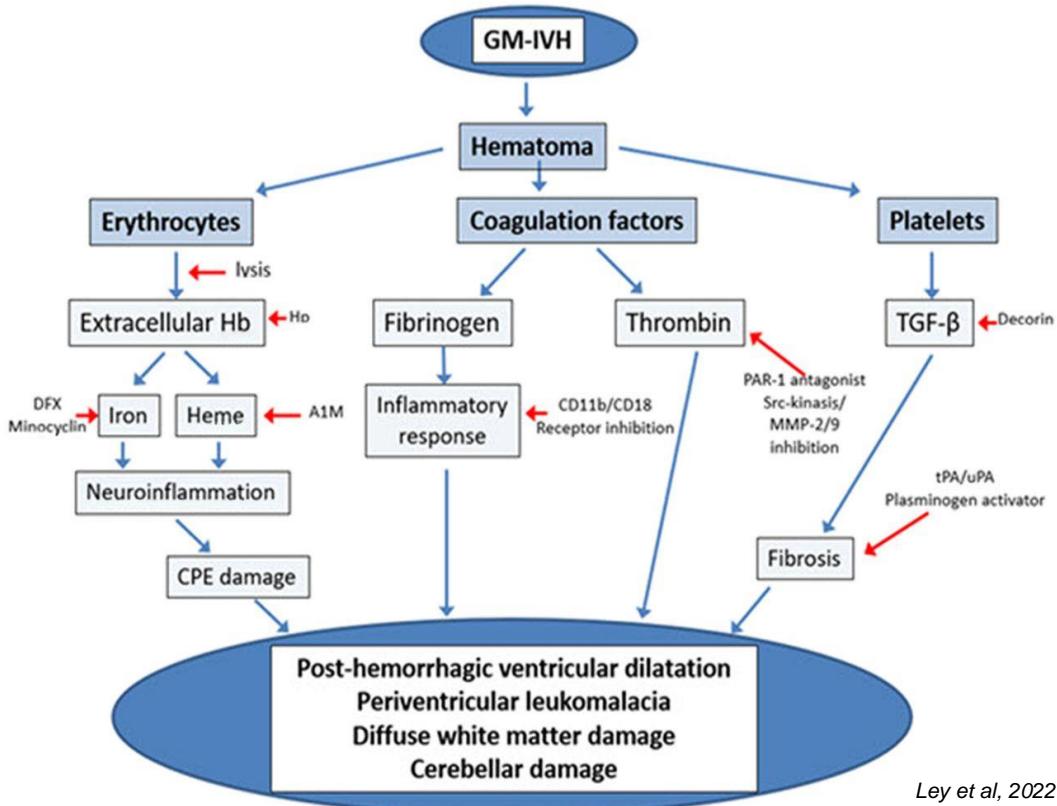
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# Intraventricular hemorrhage (IVH) and Periventricular Hemorrhagic Infarction (PVHI)



PVHI : (former grade 4 IVH)

5-10% of very preterm infants (<1500g, <32GW)

Up to 15% mortality

Up to 50% long term neurologic sequelae

Ley et al, 2022

# Aim, Materials and Methods

## « Systematic characterization of regulated cell death in PVHI »

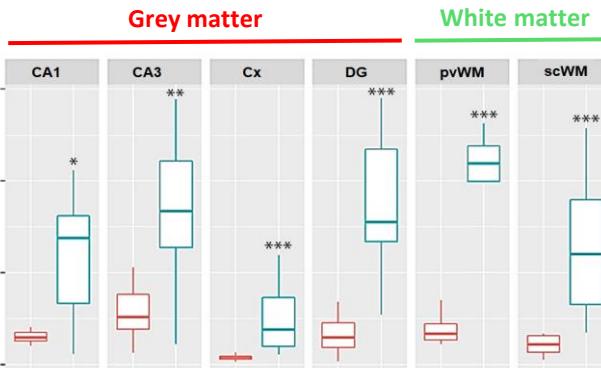
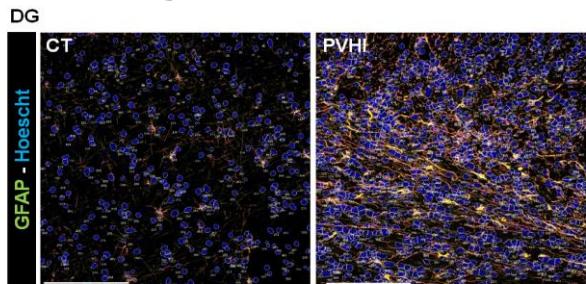
### Descriptive Population Variables :

	PVHI n=9		Control n=8		p values
	Median	Range	Median	Range	
<b>Continuous variables</b>					
Gestational age (days)	187	176 - 194	181	167 - 186	0,0793
Birth weight (grams)	900	620 - 1300	685	578 - 900	0,1775
Apgar at 1 min	3	2 - 6	1,5	0 - 3	0,0671
Apgar at 5 min	6	3 - 8	2,5	0 - 8	0,0772
Apgar at 10 min	7	3 - 9	5	0 - 9	0,1565
Arterial umbilical pH	7,28	7,08 - 7,38	7,37	6,89 - 7,45	0,7329
Maximal lactate (mmol/L) *	7,8	2 - 17	19	12 - 30	<b>0,0046</b>
Invasive ventilation (hours)	40	15 - 1210	155	52 - 208	>0.999
Maximal CO2 (mmHg)	69,8	37,3 - 98,9	81,9	76,2 - 123	0,5688
Delta CO2 (max. diff. mmHg)	35,2	6,1 - 90,9	48,7	40,9 - 49,1	0,875
Survival time (hours)	41	16 - 1210	2	0 - 1070	0,3125
<b>Discrete variables</b>					
Gender (fem/tot)	2/9 (22%)		4/8 (50%)		0,3017
Small for gestational age (weight)	3/9 (33%)		2/8 (25%)		0,7066
Chorioamnionitis (pathology)	4/9 (44%)		6/8 (75%)		0,2014
Funisitis (pathology)	2/9 (22%)		5/8 (63%)		0,0921
Sepsis (positive hemoculture)	2/9 (22%)		2/8 (25%)		0,8928

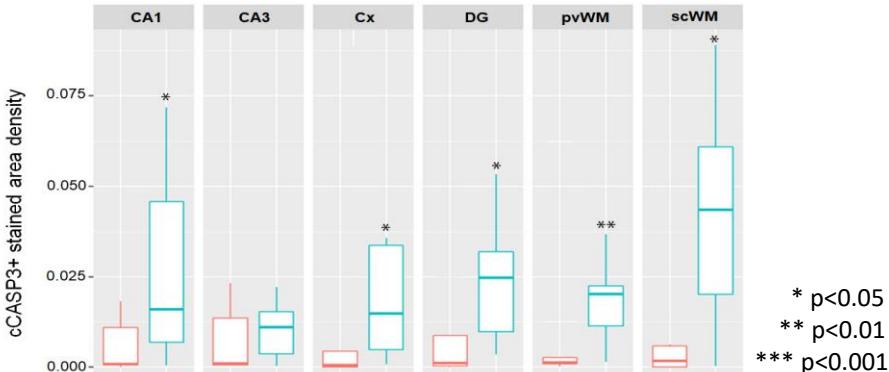
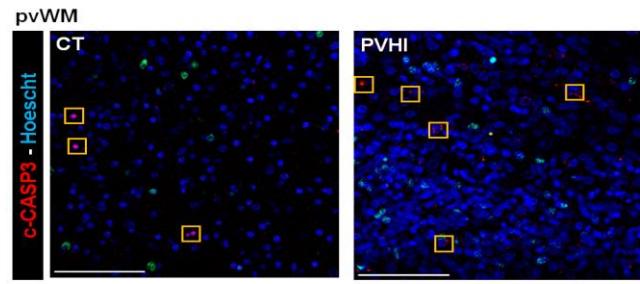
\* p<0,05

# Significant increase in astroglial and apoptotic markers in PVHI

## Astroglial marker (GFAP)



## Apoptotic marker (Casp-3)



\* p<0.05

\*\* p<0.01

\*\*\* p<0.001

- No difference in the overall cell density, cortical thickness, overall density of oligodendrocytes or neurons
- **Significant increase of GFAP (astrogliosis) and Casp-3 (apoptosis) after PVHI, in the white and grey matter**

# Acknowledgements



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