

**On-line Table 1: Baseline demographic and clinical characteristics of the asphyxiated newborns<sup>a</sup>**

No.	Gestational		Sex	Acute		Apgar	Arterial		Multi-Organ Failure	Onset		Initial aEEG Pattern <sup>b</sup>	Seizures (hr of onset after birth)	Outcome
	Age (week)	Birthweight (g)		Perinatal Event <sup>a</sup>	Mode of Delivery		Cord pH	Postnatal Blood Gas pH		Hypothermia (hr after birth)				
1	39.9	3735	F	+	Vaginal	2/6/8	6.9	7.4	+	3.7	Moderate	–	Alive	
2	39.0	3500	M	+	C-section	1/2/5	6.9	6.9	+	4.6	Moderate	3.5	Alive	
3	40.7	4180	M	+	Vaginal	0/4/6	6.9	7.2	–	4.4	Moderate	–	Alive	
4	39.0	2510	M	+	C-section	2/4/5	6.9	7.0	+	5.3	Moderate	–	Alive	
5	39.1	4060	M	+	C-section	0/0/4	Not known	6.8	+	3.4	Severe	4.0	Alive	
6	38.6	3570	M	+	C-section	2/3/4	6.9	7.2	+	3.9	Severe	–	Alive	
7	39.6	3220	F	+	Vaginal	1/1/3	6.8	6.9	+	3.7	Severe	10.0	Alive	
8	39.7	3970	M	+	Vaginal	0/0/3	7.0	7.1	+	4.4	Severe	34.2	Dead	
9	39.1	3500	M	+	C-section	1/4/–	7.0	7.1	+	5.6	Severe	1.0	Dead	
10	39.1	3600	F	+	C-section	0/0/0	Not known	6.6	+	5.3	Severe	2.0	Dead	
11	39.4	3700	F	+	C-section	0/1/2	6.6	7.2	+	2.9	Severe	2.0	Dead	
12	41.0	3844	M	+	Vaginal	3/7/7	Not known	Not known	–	–	–	8.8	Alive	
13	37.1	2695	M	+	Vaginal	6/7/–	Not known	Not known	+	–	–	20.0	Alive	
14	41.3	3725	M	+	Vaginal	4/8/–	Not known	Not known	+	–	–	–	Alive	
15	41.0	3100	F	+	Vaginal	8/8/–	Not known	Not known	+	–	–	–	Alive	
16	39.0	3925	M	+	Vaginal	2/4/6	Not known	Not known	+	–	–	3.0	Alive	
17	35.9	2480	F	+	Vaginal	5/5/5	Not known	7.2	–	–	–	–	Alive	
18	36.0	2790	M	+	C-section	4/7/–	Not known	Not known	+	–	–	12.0	Alive	

**Note:** C-section, cesarean delivery.

<sup>a</sup> Including, for example, abruptio placentae, cord prolapse, severe fetal heart rate abnormality, variable or late decelerations.

<sup>b</sup> Categorized as moderately abnormal (upper margin >10  $\mu V$  and lower margin <5  $\mu V$ ) or severely abnormal (upper margin <10  $\mu V$ ), according to Gluckman et al.<sup>18</sup>

**On-line Table 2: Timing of MRI during the first week of life, CBF values measured on this MRI, and outcome on conventional imaging**

No.	MR Imaging (hr after birth)	MR Imaging (hr after onset hypothermia)	GM CBF <sup>a</sup> (mL/100 g/min)	WM CBF <sup>a</sup> (mL/100 g/min)	BG CBF <sup>a</sup> (mL/100 g/min)	Outcome on Conventional Imaging
Control 1	DOL 2	—	38.5 ± 4.0	3.6 ± 1.2	30.9 ± 2.4	
Control 2	DOL 3	—	42.4 ± 3.0	2.6 ± 1.0	28.8 ± 1.7	
Control 3	DOL 4	—	38.0 ± 3.1	2.3 ± 0.6	28.2 ± 1.9	
Control 4	DOL 10	—	39.7 ± 4.0	2.9 ± 0.8	29.3 ± 2.5	
Patient 1	DOL 1 (6.0)	2.3	18.6 ± 3.0	4.1 ± 2.8	8.8 ± 1.6	No brain injury on DOL 1, 2, 10, and 32
	DOL 2 (43.0)	39.3	39.9 ± 3.5	2.4 ± 1.0	27.5 ± 1.9	
Patient 2	DOL 1 (12.0)	7.4	34.8 ± 5.4	4.3 ± 2.3	18.2 ± 3.4	No brain injury
	DOL 2 (36.0)	31.4	38.7 ± 4.9	2.4 ± 0.9	25.0 ± 4.0	No DOL 1, 2, 13, and 34
Patient 3	DOL 1 (19.9)	15.5	34.0 ± 5.3	4.2 ± 2.2	24.2 ± 3.7	No brain injury on DOL 1, 2, 10, and 31
	DOL 2 (43.9)	39.5	39.1 ± 2.6	2.6 ± 0.9	26.4 ± 2.4	
Patient 4	DOL 2 (39.0)	33.7	38.5 ± 2.6	3.1 ± 1.2	25.6 ± 2.8	No brain injury on DOL 2, 10, and 31
Patient 5	DOL 1 (15.0)	11.7	24.4 ± 3.5	3.6 ± 1.9	15.3 ± 3.1	No brain injury on DOL 1, 2, 11, and 31
	DOL 2 (41.0)	—	27.5 ± 3.6	2.2 ± 1.3	19.7 ± 3.4	
Patient 6	DOL 1 (24.0)	20.1	24.5 ± 3.8	2.9 ± 1.2	14.9 ± 2.5	No brain injury on DOL 1, 2, 10, and 31
	DOL 2 (48.0)	44.1	32.1 ± 3.4	2.7 ± 1.4	20.6 ± 3.5	
Patient 7	DOL 3 (64.0)	60.3	38.4 ± 3.0	2.5 ± 1.3	26.6 ± 3.1	No brain injury on DOL 3 and 9
Patient 8	DOL 1 (6.5)	2.1	<b>13.1 ± 2.1</b>	<b>5.7 ± 3.0</b>	<b>6.2 ± 2.6</b>	<b>GM + WM + BG</b> injury on DOL 2
	DOL 2 (26.0)	21.6	<b>64.4 ± 11.8</b>	<b>19.0 ± 9.3</b>	<b>77.7 ± 19.3</b>	
Patient 9	DOL 1 (7.0)	1.4	21.4 ± 3.8	2.6 ± 0.8	<b>2.5 ± 1.2</b>	<b>BG</b> injury on DOL 2, 10, and 32
	DOL 2 (29.5)	23.9	26.2 ± 2.7	1.9 ± 1.0	<b>7.9 ± 3.6</b>	
Patient 10	DOL 1 (8.5)	4.4	21.0 ± 4.5	4.7 ± 1.7	<b>5.3 ± 2.2</b>	<b>T</b> injury on DOL 2
	DOL 2 (35.5)	29.7	24.9 ± 2.8	2.1 ± 1.2	<b>33.5 ± 5.2 (T)</b>	
					and 16.1 ± 2.6 (R BG)	
Patient 11	DOL 1 (11.0)	8.1	18.4 ± 4.5	3.2 ± 0.8	8.3 ± 2.0 <sup>c</sup>	<b>T</b> injury on DOL 2
	DOL 2 (41.0)	38.1	27.2 ± 3.3	2.2 ± 0.9	<b>33.1 ± 3.6 (T)</b>	
					17.2 ± 2.5 (R BG)	
Patient 12	DOL 1	—	<b>56.0 ± 9.0</b>	<b>12.4 ± 2.8</b>	<b>44.0 ± 7.8</b>	<b>GM + WM + BG</b> injury on DOL 3, 10, and 30
	DOL 3	—	<b>88.2 ± 10.0</b>	<b>14.5 ± 2.6</b>	<b>88.5 ± 9.3</b>	
Patient 13	DOL 3	—	<b>75.2 ± 11.3</b>	<b>15.5 ± 4.0</b>	<b>43.8 ± 7.1</b>	<b>GM + WM + BG</b> injury on DOL 3 and 11
Patient 14	DOL 3	—	<b>64.2 ± 9.5</b>	<b>9.2 ± 3.5</b>	<b>56.7 ± 11.5</b>	<b>GM + WM + BG</b> injury on DOL 3 and 9
Patient 15	DOL 3	—	<b>56.5 ± 6.1 (P)</b>	<b>1.3 ± 0.9</b>	<b>53.3 ± 7.7</b>	<b>P + BG</b> injury on DOL 3
			and 40.1 ± 2.8 (R GM)			
Patient 16	DOL 4	—	<b>49.4 ± 4.8</b>	<b>5.4 ± 2.4</b>	28.9 ± 3.0	<b>GM + WM</b> injury on DOL 4 and 8
Patient 17	DOL 5	—	<b>49.4 ± 5.6</b>	<b>11.3 ± 3.3</b>	<b>36.0 ± 3.8</b>	<b>GM + WM + BG</b> injury on DOL 5
Patient 18	DOL 6	—	<b>44.8 ± 4.5</b>	<b>5.5 ± 2.8</b>	28.7 ± 2.2	<b>GM + WM</b> injury on DOL 6

**Note:**—P, Parietal; MRI, MR imaging.

<sup>a</sup>CBF values in the brain areas exhibiting injury are highlighted in bold.

**On-line Table 3: Variables that might influence cerebral blood flow**

No.	MR Imaging (hr after birth)	Temperature (°C)	pCO <sub>2</sub> (mm Hg)	FiO <sub>2</sub>	Hematocrit	Mechanical Ventilation	Pressor Support	Sedation	Antiepileptic Treatment
1	DOL 1 (6.0)	32.1	26.8	0.21	45.7	Yes	No	Yes	No
	DOL 2 (43.0)	33.4	34.3	0.21	37.2	Yes	No	Yes	No
2	DOL 1 (12.0)	33.7	40.4	0.21	35.4	Yes	Yes	Yes	Yes
	DOL 2 (36.0)	33.6	41.6	0.35	41.7	Yes	Yes	No	Yes
3	DOL 1 (19.9)	35.6	30.6	0.21	38.7	Yes	Yes	Yes	No
	DOL 2 (43.9)	33.4	36.2	0.21	36.3	Yes	Yes	Yes	No
4	DOL 2 (39.0)	33.2	39.3	0.38	37.3	Yes	Yes	Yes	No
5	DOL 1 (15.0)	31.4	40.2	0.25	31.6	Yes	Yes	Yes	Yes
	DOL 2 (41.0)	35.8	39.8	0.30	48.5	Yes	Yes	Yes	Yes
6	DOL 1 (24.0)	33.4	34.2	0.21	44.6	Yes	No	Yes	No
	DOL 2 (48.0)	33.1	36.1	0.21	36.6	Yes	No	Yes	No
7	DOL 3 (64.0)	32.8	39.2	0.21	40.0	Yes	Yes	Yes	Yes
8	DOL 1 (6.5)	33.3	35.8	0.25	39.8	Yes	No	Yes	No
	DOL 2 (26.0)	32.7	42.0	0.21	37.9	Yes	No	Yes	No
9	DOL 1 (7.0)	33.1	30.6	0.21	38.2	Yes	No	Yes	Yes
	DOL 2 (29.5)	33.3	31.8	0.21	37.5	Yes	No	Yes	Yes
10	DOL 1 (8.5)	33.1	30.6	0.25	45.9	Yes	No	Yes	Yes
	DOL 2 (35.5)	32.6	30.9	0.21	37.0	Yes	No	No	Yes
11	DOL 1 (11.0)	33.1	28.0	0.21	50.2	Yes	No	No	Yes
	DOL 2 (41.0)	33.4	30.1	0.21	50.1	Yes	No	No	Yes
12	DOL 1	36.8	–	1.00	–	No	No	No	Yes
	DOL 3	37.0	–	0.21	32.9	No	No	No	Yes
13	DOL 3	37.0	41.3	0.21	39.2	Yes	Yes	No	Yes
14	DOL 3	37.0	–	0.21	–	No	No	No	No
15	DOL 3	35.9	35.5	0.24	45.7	Yes	No	Yes	No
16	DOL 4	37.1	36.6	0.21	37.6	Yes	No	No	Yes
17	DOL 5	36.8	–	0.21	–	No	No	No	No
18	DOL 6	35.9	–	0.21	46.9	No	No	Yes	Yes