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Objective: To compare fetal blood biological parameters in severely and mild-moderately affected fetuses infected with CMV

Methods: Study period: 2006-2013. Cross sectional study including infected fetuses (CMV-DNA + in AF) with abnormal US/MRI findings. FBS was obtained for evaluation of platelet count (< or ≥ 100 000/μl), Beta-2 microglobuline (< or ≥ 11.5 mg/l), gamma-glutamyl transferase (GGT) (< or ≥ 151 UI/l), presence/absence of IgM antibody and DNAemia (< or ≥ 30 000copies/ml). Blood parameters were compared in severely affected fetuses (severe CNS abnormalities involving cerebral parenchyma or fetal hydrops) and mild-moderately affected ones (isolated extra-CNS or mild CNS abnormalities) diagnosed at sonographic examination, and confirmed at postmortem or postnatal evaluation.

Results: FBS was obtained in 17 fetuses: 10 severely damaged (Group A) and 7 mild-moderately damaged (Group B) (Table 1 and 2). Cordocentesis was performed at a mean GA 26.2 wks (20.4-35.5). No differences in GA were observed between both groups (28.1 vs 28.2)

- Low platelet count (<100 000/μl): 78% (Group A) vs 43% (Group B) p=0.15
- High levels of GGT (≥ 151 UI/l): 83% (Group A) vs 50% (Group B) p=0.22
- High levels of Beta2 microglobuline (≥11.5 mg/l): 37% (Group A) vs 67% (Group B) p=0.28
- High levels of DNAemia (>30 000 copies/ml): 50% (Group A) vs 83% (Group B) p=0.20
- IgM positivity: 37% (Group A) vs 29% (Group B) p=0.71



Table 1: Group A: CMV severely damaged fetuses. US/MRI findings, fetal biological parameters and outcome

GA (wks) Dx	US/MRI CNS	US Extra-CNS	GA (wks) FBS	Platelets/ μl	Beta-2 μglob mg/l	GGT UI/l	CMV- IgM	DNAemia copies/ml	Outcome	Autopsy/ Follow-up
20	None	Fetal hydrops	20	5000	N/A	N/A	N/A	N/A	IU demise 20 wks	Fetal hydrops No CNS damage
20	Mild VMG PV hyperechogen. CC hypoplasia	Hyperecho bowel	22	26 000	9.7	667	Positive	460 000	TOP 22 wks	CNS: Encephalitis Perivasc necrosis
20	PV "halo" Microencephaly Parenq. Calcific. MRI: VMG.	Hyperecho bowel Oligohydramnios	24	N/A	9.9	265	Negative	20 098	TOP 24 wks	CNS: VMG Encephalitis
22	Mild VMG PV hyperechogen. MRI: Temporal cysts	Hyperecho bowel	35	234 000	27.7	12	Negative	5 849	TOP 35 wks	CNS: Polymicrogyria Cortical dysplasia
22	Microencephaly PV hyperechogen. MRI: Microcephaly Abnorm. sulcation	Hyperecho bowel	24	43 000	12.4	1510	Positive	N/A	TOP 24 wks	CNS: Periventriculitis
23	Severe VMG Coarse calcificat.	None	24	90 000	12.3	422	Positive	179 000	TOP 24 wks	CNS: Severe VMG Cortical dysplasia
27	Intrav. sinequiae MRI: Microceph. Abnorm. sulcation	None	30	6 000	9.3	329	Negative	2125	TOP 30 wks	CNS: No diagnosis
31	Microencephaly Parenchymal haemorrhage	None	31	62 000	N/A	N/A	N/A	1 000 000	TOP 31 wks	CNS: Haemorrhage Necrosis front lobe
32	Severe VMG PV hyperechogen.	IUGR	33	63 000	7.5	N/A	NA	420 000	TOP 33 wks	CNS: VMG PV calcifications
32	VMG CC. dysplasia MRI: Microcephaly Polymicrogyria	None	35	120 000	6.4	N/A	Negative	4233	Selective TOP 35 wks	Autopsy N/A

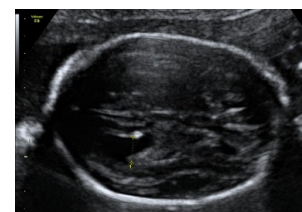
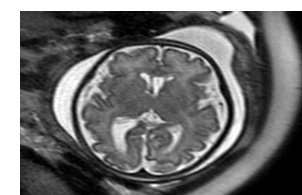
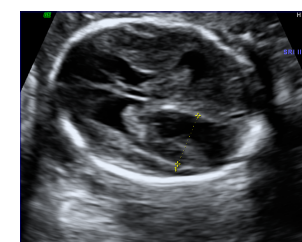
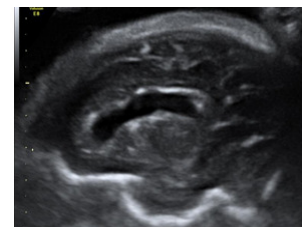


Table 2: Group B: CMV mild-moderately damaged fetuses. US/MRI findings, fetal biological parameters and outcome

GA (wks) Dx	US/MRI CNS	US Extra-CNS	GA (wks) FBS	Platelets/ μl	Beta-2 μglob mg/l	GGT UI/l	CMV- IgM	DNAemia copies/ml	Outcome	Autopsy/ Follow-up
20	None	Hyperecho bowel	22	100 000	12.7	120	Positive	900 000	TOP 23 wks.	No CNS damage
20	None	Hyperecho bowel Oligohydramnios	22	30 000	14.2	N/A	Negative	118 000	TOP 23 wks.	No CNS damage
22	None	Hyperecho bowel Cardiomegaly	28	9 000	11.6	504	Positive	18 327	TOP 28 wks	No CNS damage
22	PV hyperechogen. Periventriculitis	Hyperecho bowel IUGR	26	94 000	19.5	1370	Negative	114 000	TOP 26 wks	CNS: Periventriculitis
29	Mild VMG	None	29	132 000	N/A	120	Negative	N/A	Term delivery	Unilateral SNHL
34	PV hyperechogen. MRI: WM signal abnormalities	None	35	155 000	5.6	662	Negative	34 655	TOP 36 wks.	CNS: Cortical encephalitis
34	PV hyperechogen. Mild calcifications MRI: Temporal and PV cysts	None	35	240 000	7.0	72	Negative	205 289	Term delivery	Asymptomatic at 5 months

CONCLUSIONS: In fetuses with abnormal US/MRI findings and confirmed CMV infection, no significant differences were observed in blood phenotype with respect to the degree of fetal damage.