Early Elevated Leucocyte count predicts Neurodevelopmental Outcome in children with Neonatal Encephalopathy and remains altered at school age

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INTRODUCTION

Haematological abnormalities are common in infants with neonatal encephalopathy (NE) and may be associated with neurodevelopmental outcome. Elevated peripheral leucocyte count is associated with high risk of mortality and neurological disability in infants with NE.

AIM

To examine any correlation between elevated leucocyte count and adverse neurological outcome in children with NE at school-age

RESULTS

Significant correlation noted between Bayley’s composite cognitive scores (BSID III) in children with NE at 2 years of age and maximum peripheral WCC in the first week of life (Rho 0.4, p value= 0.007) (Table 1)

At school-age: The peripheral WCC in NE group was significantly higher than age-matched controls (mean WCC of 9.1 vs 8.1 x10⁹/L; p value=<0.02). WCC and neutrophil counts were higher in children with moderate to severe encephalopathy (NE II/III) vs children with mild encephalopathy (NE 0/I) {mean WCC 9.4 vs 8.5 x10⁹/L; p value=0.07 and mean neutrophil count 4.3 vs 3.3 x10⁹/L; p value=0.007}. (Figure 1&2)

No significant difference noted in the haemoglobin (Hb) or platelet levels between the two groups. The WCC and Neutrophil counts did not correlate with school-age developmental outcome on ASQ-3

METHODS

Early haematological values of neonates with Neonatal Encephalopathy (NE) were correlated with Bayley assessment scores (BSID III) done at 2 years of age (n=45). We also compared haematological parameters of the same group of children who had NE, at school age (n=48) with age matched controls (n=52) and any associations with Ages and Stages Questionnaire (ASQ-3).

Figure 1. Mean value of WCC and Neutrophil count of NE vs Controls.

Figure 2. Mean value of WCC & Neutrophil counts of NEII/III vs NEO/I.

Correlations				
			Max WCC	Bay Comp Cog Score
Spearman' Rho	Max WCC	Correlation Coefficient	1.000	.400**
		Sig. (2-tailed)		.007*
		N	56	45

**Correlation is significant at the 0.01 level (2-tailed).

CONCLUSION

Early white cell count in children with NE predicts abnormal neurodevelopmental outcome. In addition, WCC and Neutrophil counts remain significantly elevated at school-age in children who had NE compared to controls implying a persistently altered systemic inflammatory response.

REFERENCES

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