

“Clinical and Brain Imaging Correlates in Romanian Cohort of Children Diagnosed With Cerebral Palsy”

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INTRODUCTION

Cerebral Palsy, one of the most common causes of childhood disability, determines permanent disorders of movement and posture due to an injury to the developing brain before, during or after birth. Apart from the motor impairment, it often associates impairments of cognition, language and behavior and a range of secondary conditions that are seriously affecting the social functioning and the quality of life of the children diagnosed with this disorder. Brain imaging, particularly MRI, allows clinicians to diagnose early the cerebral palsy. It also might be useful in finding association between general intellectual functioning and the affected brain structure allowing clinicians to better manage the course of the condition in the developing child

OBJECTIVES

- 1.To investigate the correlates of cerebral palsy diagnostic in a population sample
- 2.To analyze the possible correlation between the risk factors and the clinical correlates identified in our studied sample
- 3.To compare clinical findings with information revealed by brain imaging data in our studied sample

MATERIALS AND METHODS

For our cross-sectional investigative study we have included in our sample **109 children** diagnosed with different subtypes of cerebral palsy from among the patient clinically assessed in the Neuropediatric Unit of Children’s Clinical Hospital “Dr. V. Gomoiu”, Bucharest between 2018 -2023, that were identified up to the moment of this abstract submission. MRI information were available for 87 subjects, only 4 subjects had a CT scan and 2 subjects a transfontanelar ultrasound.

The participants included **52 females** and **57 male** and age at the last admission in our clinic varied between 2 years and 17 years old. Standardized clinical examination data, results of psychological tests used to assess intellectual functioning, obstretic, genetic and metabolic data from medical records were analyzed.

The severity of motor function impairment was assessed using Gross Motor Function Classification Scale (GMFCS).

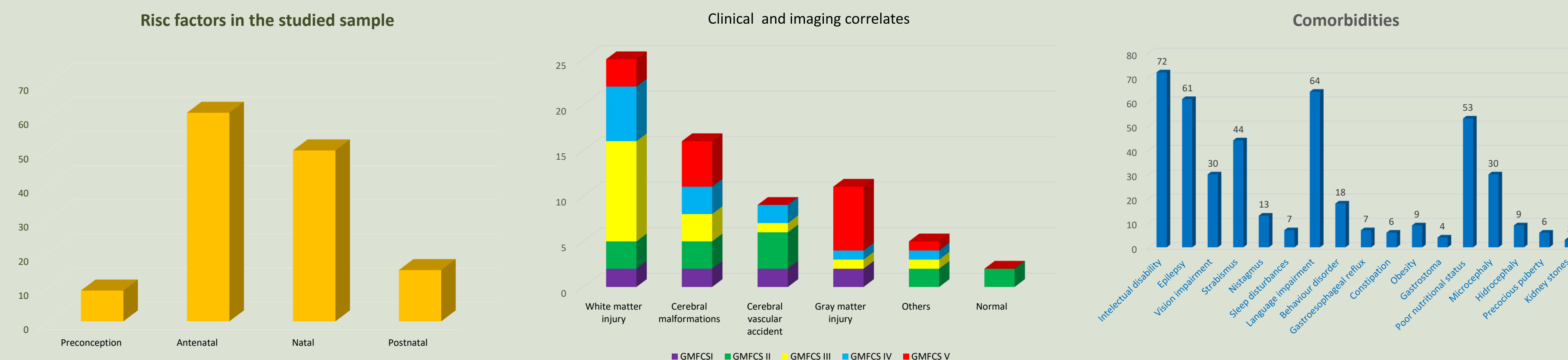
We have used descriptive statistics: Pearson chi square test was performed to assess the statistical significance of associations between categorial variables and ANOVA test for numerical variables. In order to analyze data IBM SPSS Statistics 29.0. 10 for Windows software and the Data Analysis module of the software Micosoft Excel were used

RESULTS

In accordance with previous studies, we have find spastic diplegia as the most frequent clinical form of cerebral palsy in our sample (35,78%).

Among the risk factors, the antenatal ones were most frequently reported in our studied cases: maternal hemorrhage (16,39%), premature labor contractions (13,11%) and prolonged rupture of membrane (11,47%).

MRI findings revealed periventricular white matter lesions as being the most common in our subjects (44,82%) and a significant relationship between the severity of the clinical phenotypes and the type of imaging lesion was determined : $\chi^2(20, N=67)=33,90, p=0.027, p <.05$



CONCLUSIONS

Intellectual disability, language impairment, epilepsy and poor nutritional status were the most frequent conditions associated with cerebral palsy in our studied sample.

We identified a statistically significant relation between brain imaging and the severity of motor impairment in cerebral palsy in our subjects as measured by GMFCS scale, as well as a significant statistical correlation between the clinical phenotype and the degree of prematurity at birth in our subjects.

An important conclusion would be that all children with CP should have a brain imaging exploration, ideally MRI, in order to obtain information on the timing and extent of the lesion that is causing the symptomatology.

REFERENCES

1. M.Bax et al., Clinical and MRI Correlates of Cerebral Palsy The European Cerebral Palsy Study, JAMA, October 4, 2006 -Vol296, No13
2. Dhondt et al., Prevalence of cerebral palsy and factors associated with cerebral palsy subtype. A population - based study in Belgium, European Journal of Paediatric Neurology, 46 (2023) 8-23
3. Laporta-Hoyos et al., Cognitive, academic, executive and psychological functioning in children with spastic motor type cerebral palsy: influence of extent, location and laterality of brain lesions, European Journal of Paediatric Neurology, 38, 2022, 33-46

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