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**RISK FACTORS AND PROGNOSTIC INDICATORS OF NEUROENDOCRINE
COMPLICATIONS IN PRIMARY SCHOOL-AGED CHILDREN AFTER TRAUMATIC
BRAIN INJURY**

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Abstract : Neuroendocrine complications are increasingly recognized as significant long-term consequences of traumatic brain injury (TBI) in children. However, not all pediatric patients develop endocrine dysfunction, suggesting the presence of specific risk factors and prognostic indicators. This study aims to identify clinical and injury-related factors associated with the development of neuroendocrine complications in primary school-aged children following traumatic brain injury.

A longitudinal observational study was conducted, focusing on injury severity, neuroimaging findings, and early hormonal changes. The results demonstrate that injury severity, repeated head trauma, and early hypothalamic-pituitary abnormalities are key predictors of neuroendocrine dysfunction. Early identification of high-risk patients allows targeted monitoring and preventive intervention.

Key Words: Traumatic brain injury, children, neuroendocrine complications, risk factors, prognosis, hypothalamic-pituitary axis.

Introduction

Traumatic brain injury remains a leading cause of morbidity in children and may result in long-term neurological and systemic complications. Among these, neuroendocrine disorders represent a significant but often underestimated outcome of pediatric TBI. The developing hypothalamic-pituitary axis is particularly vulnerable to mechanical and ischemic injury, which may disrupt hormonal regulation.

While neuroendocrine complications are well documented, their occurrence varies widely among children with similar injury characteristics. This variability suggests that specific risk factors and prognostic indicators influence the development and severity of endocrine dysfunction. Identifying these factors is essential for optimizing early diagnosis, monitoring strategies, and preventive care.

This study focuses on analyzing clinical, radiological, and hormonal predictors of neuroendocrine complications in primary school-aged children following traumatic brain injury.

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Methods

The study included 55 children aged 6–10 years who were diagnosed with mild, moderate, or severe traumatic brain injury. Patients were followed for 12 months after injury. Children with congenital endocrine or neurological disorders were excluded.

Data collected included injury mechanism, severity based on Glasgow Coma Scale, presence of skull fractures, and neuroimaging findings involving the hypothalamic or pituitary regions. Hormonal evaluation included serum cortisol, ACTH, growth hormone, thyroid-stimulating hormone, and free thyroxine measured during the acute phase and at follow-up intervals.

Statistical analysis was performed to identify associations between risk factors and the development of neuroendocrine complications.

Results

Neuroendocrine complications were identified in 31% of children during the follow-up period. The highest incidence was observed in patients with moderate to severe traumatic brain injury. Recurrent head trauma significantly increased the risk of endocrine dysfunction.

Abnormal neuroimaging findings involving the hypothalamic-pituitary region were strongly associated with hormonal disturbances. Early abnormalities in cortisol and growth hormone levels during the acute phase were predictive of persistent endocrine disorders.

Children without identified risk factors rarely developed clinically significant neuroendocrine complications.

Discussion

The results of this study emphasize the importance of identifying risk factors for neuroendocrine complications following traumatic brain injury in children. Injury severity and structural damage to the hypothalamic-pituitary axis emerged as the most significant predictors.

Early hormonal changes may serve as valuable prognostic indicators, allowing clinicians to stratify patients according to risk. This risk-based approach enables more efficient allocation of diagnostic resources and focused long-term monitoring for high-risk children.

Understanding prognostic indicators also aids in counseling families regarding potential long-term outcomes and the necessity of continued follow-up.

Conclusion

Neuroendocrine complications after traumatic brain injury in primary school-aged children are influenced by specific clinical and injury-related risk factors. Injury severity, repeated trauma, neuroimaging abnormalities, and early hormonal disturbances are key prognostic indicators of endocrine dysfunction.

Early identification of high-risk patients enables targeted preventive strategies, timely diagnosis, and improved long-term outcomes. Incorporating risk stratification into standard pediatric TBI management protocols is essential for reducing the burden of neuroendocrine complications and optimizing child development.

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Literatures:

1. Kilicheva, I. B. (2025). PULMONARY ADAPTATION DISORDERS AND LUNG CHANGES IN NEONATES WITH PNEUMOPATHY. *Shokh Articles Library*, 1(1).
2. Kilicheva, I. B. (2025). COMPREHENSIVE PHYSIOLOGICAL AND HORMONAL CHANGES OF THE ENDOCRINE SYSTEM DURING PREGNANCY. *SHOKH LIBRARY*, 1(12).
3. Baxtiyorovna, A. S., Baxtiyorovna, K. I., Baxromovich, R. J., Anvarjanovna, M. M., Qodirovich, Q. S., Djiganshayevna, B. G., ... & Qizi, Y. D. J. (2025). The Role of Neurophysiological and Neurovisualization Testing Methods in the Diagnosis of Motor Neuron Disease. *Revista Latinoamericana de la Papa*, 29(1), 196-201.
4. Klicheva, I. (2025). SOME PHYSIOLOGICAL RESOURCES THAT AFFECT A PERSON'S BIOLOGICAL AGE. *International journal of medical sciences*, 1(1), 415-420.
5. Baxtiyorovna, A. S., Baxtiyorovna, K. I., Baxromovich, R. J., Djiganshayevna, B. G., Ne'matovich, Q. A. O., Anvarjanovna, M. M., ... & Kizi, R. M. B. (2024). SIGNIFICANCE OF AUTOANTIBODIES TO MYELIN-ASSOCIATED GLYCOPROTEIN IN PATIENTS WITH ALS. *Biochemical & Cellular Archives*, 24(2).
6. Абдурахманов, А. Х. (2025). ВЛИЯНИЕ ЭНТЕРОСОРБЕНТОВ НА ЭФФЕКТЫ ИНТРАДУОДЕНАЛЬНО ВВОДИМОЙ АМИЛАЗЫ. *Zamonaviy tibbiyot jurnali (Журнал современной медицины)*, 9(2), 893-896.
7. Zulunova, I. B. (2023). SECRETION OF HYDROLITHIC FERMENTS OF THE PANCREAS AND FERMENTAL HOMEOSTASIS IN CASE OF Y-RADIATION. *International Journal of Medical Sciences And Clinical Research*, 3(06), 14-20.
8. Абдурахманов, А. Х. (2025). ВЛИЯНИЕ ЭНТЕРОСОРБЕНТОВ НА ТОРМОЗНЫЕ ЭФФЕКТЫ ИНТРАДУОДЕНАЛЬНО ВВЕДЕННОГО ПАНКРЕАТИЧЕСКОГО СОКА НА СЕКРЕЦИЮ ПОДЖЕЛУДОЧНОЙ ЖЕЛЕЗЫ. *Zamonaviy tibbiyot jurnali (Журнал современной медицины)*, 9(2), 875-880.
9. Nozimjon o'g'li, S. S., Makhmudovich, A. H., & Xasanboy o'g'li, A. A. (2022). Nutrition Recommendations for Cardiac Pathologies. *European Scholar Journal*, 3(10), 66-67.
10. Makhmudovich, A. X., Raximberdiyevich, R. R., & Nozimjon o'g'li, S. S. (2021). Oshqozon Ichak Traktidagi Immunitet Tizimi. *TA'LIM VA RIVOJLANISH TAHLILI ONLAYN ILMIY JURNALI*, 1(5), 83-92.
11. Коротько, Г. Ф., Лемешкина, Г. С., & Абдурахманов, А. Х. (1990). Выключение энтеросорбентами 5. обратного торможения секреции панкреатических ферментов из двенадцатиперстной кишки. *Вопр. питания*, (5), 21-25.
12. Shoxabbos, S., & Mahramovich, K. S. M. K. S. (2023). Causes of the origin of cardiovascular diseases and their protection. *IQRO JURNALI*, 1-6.
13. Абдурахманов, А. Х. (2022). ТРАНСФОРМАЦИЯ ЭНТЕРОСОРБЕНТАМИ ЭФФЕКТА ИНТРАДУОДЕНАЛЬНО ВВОДИМОЙ АМИЛАЗЫ. *Экономика и социум*, (11-2 (102)), 284-288