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NEURO-COGNITIVE DISORDERS IN PATIENTS WITH PRIMARY HYPERPARATHYROIDISM FIRST DIAGNOSED DURING PREGNANCY

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Abstract: In 2014, the latest international guidelines for the diagnosis and treatment of primary hyperparathyroidism (PHPT) were released. However, since then, scientific research has led to significant progress in our understanding of PHPT. New data have been obtained on the epidemiology, mechanisms of development, diagnostic methods, genetic aspects, prognosis, clinical manifestations, modern imaging techniques, the impact on various organs and systems, as well as on pregnancy management and treatment. Most of these discoveries have been published after 2014. Therefore, it was decided to assemble an international team of more than 50 experts to systematize and analyze this new knowledge. The work was organized into four groups, each focusing on a specific area: 1. Epidemiology, pathophysiology, and genetics; 2. Characteristic and atypical manifestations; 3. Surgical approaches; and 4. Therapeutic strategies.

Keywords: primary hyperparathyroidism, gestational, neurocognition

Therefore, in 2022, the latest American Association of Endocrine Surgeons (AAES) guideline on PHPT was released, which, in addition to the above four points, stated that neurocognitive function should be assessed in this cohort of patients with PHPT [2]. More precisely, in fact, the American Association of Endocrine Surgeons recommended that neuropsychiatric symptoms be assessed in all patients with PHPT and that they should be considered a relative indication for parathyroidectomy (PTE). [3, 4] The manual also states that One of the most common, but non-classical, manifestations of PHPT is associated with neurocognitive or neuropsychiatric function

Conflicting literature on this topic was resolved in 2021 by the results of a 10-year prospective, randomized, controlled clinical trial. This study, which included patients following successful parathyroid surgery, found no confirmation of the proposed association between neurocognitive function and hyperparathyroidism (HPT). This means that even if mechanisms explaining neurocognitive manifestations exist, they remain poorly understood, and data from randomized controlled trials (RCTs) do not demonstrate clear or consistent reversibility of these impairments after HPT.[5]Recommendations were announced in 2022:.[1]

1. Neurocognitive or neuropsychiatric testing should not be routinely performed in PHPT.
2. Neurocognitive or neuropsychiatric manifestations, if present, should not, by themselves, warrant a recommendation for parathyroid surgery.
3. Further research is needed, including further development of a disease-specific quality of life assessment tool.

All of the above served as a prerequisite for this study.

Purpose of the study– to study neurocognitive impairments in patients with gestational primary hyperparathyroidism

Material and methods of research.Eleven women of reproductive age (prospectively) with PHPT, first diagnosed during pregnancy, were examined in the period 2024. The average age of the patients was 30.2 ± 1.4 years. The control group consisted of 10 healthy women of the corresponding age.

Research methods- general clinical (PAS questionnaire), biochemical (total calcium, phosphorus, Vit D, bilirubin, direct, indirect, urea, creatinine ALT, AST, PTI, etc.), hormonal (TSH, PHPT) and instrumental: ECG, ultrasound of the thyroid gland, internal organs, chest X-ray, etc.

We adapted the PAS questionnaire to better quantify the existing symptoms and the resulting mean scores were compared between the two main groups.[6] This tool measures the frequency and severity of symptoms in patients. It assesses not only the presence of symptoms but also their intensity (on a scale of 0 to 100), allowing for the quantification of manifestations characteristic of hyperparathyroidism and the calculation of a total symptom score.

To assess neurocognitive function, we used the Mini-mental State Examination (MMSE). The Mini-Mental State Examination (MMSE) is a short 30-item questionnaire widely used for the initial assessment of cognitive function and screening for cognitive impairment, including dementia. The MMSE is also used to assess cognitive performance during therapy.[7]

The test score is calculated by summing the results for each item. The maximum possible score on this test is 30 points, which corresponds to the highest cognitive abilities. The lower the test score, the more severe the cognitive deficit. 1) ≥ 25 points – normal; 2) 21–24 points – mild dementia; 3) 10–20 points – moderate dementia; 4) ≤ 9 points – severe dementia.

Any rating greater than 27 (out of 30) is the effective normal. The normal value is also adjusted for the degree of training and age. or mild (19–23 points) cognitive impairment.

Inclusion criteria: pregnant women, hypercalcemia, PHPT in women of childbearing age.

Exclusion criteria: children and adolescents, men, non-pregnant women.

Statistical calculations were performed in the Microsoft Windows environment using Microsoft Excel 2007 and Statistica version 6.0 (2003). We summarized baseline and demographic characteristics using descriptive statistics. To assess correlations, we used the Spearman test. A two-tailed p value of <0.05 was considered statistically significant.

Results of the study. It was found that the intensity of various symptoms according to the questionnaire PAS was significantly higher in the main group compared to the control group. Moreover, the average scores in the main group were within 85.6 ± 8.5 points, while in the control group they reached average values 3.6 ± 0.3 points ($p < 0.0001$).

Total values on the scale MMSE in the main group were within the range 23.3 ± 2.6 points, while in the control group they were within 28.7 ± 3.3 points. ($p < 0.0001$).

Conclusion The results obtained based on the use of questionnaire PAS and MMSE indicate a significant decrease in quality of life and neurocognitive function in patients with gestational primary hyperparathyroidism.

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