AMERICAN ACADEMIC PUBLISHER

INTERNATIONAL JOURNAL OF MEDICAL SCIENCES

ISSN NUMBER: 2692 - 5206 Volume 5. No 12. December ,2025

HYPERPROLACTINEMIA IN YOUNG CHILDREN: PATHOPHYSIOLOGY, CLINICAL SIGNIFICANCE, AND LONG-TERM COMPLICIATIONS

Narzilloyeva Malika Shuhrat kizi

Department of Fundamental Medical Sciences of the

Asian International University, Bukhara, Uzbekistan

Annotation : Prolactin is a polypeptide hormone synthesized by lactotroph cells of the anterior pituitary gland. Although its primary physiological role is associated with lactation, prolactin also participates in immune regulation, osmoregulation, and neuroendocrine development. In childhood, prolactin secretion is normally low; therefore, hyperprolactinemia represents a pathological condition that may significantly disrupt growth, pubertal development, and bone metabolism. This article analyzes the etiology, neuroendocrine regulation, pathophysiological mechanisms, clinical manifestations, diagnostic approach, and long-term complications of hyperprolactinemia in young children.

Keywords : prolactin, hyperprolactinemia, children, pituitary gland, hypothalamic–pituitary–gonadal axis.

Prolactin (PRL) is a 199–amino acid peptide hormone produced by the anterior pituitary gland. Unlike other pituitary hormones, prolactin secretion is predominantly under tonic inhibitory control of hypothalamic dopamine. In pediatric patients, disturbances in this regulatory mechanism may lead to hyperprolactinemia, a condition that is often underdiagnosed due to its nonspecific clinical presentation. Early identification is crucial, as prolonged prolactin excess may lead to irreversible endocrine and developmental consequences.

Neuroendocrine Regulation of Prolactin Secretion

Prolactin secretion is regulated primarily through dopaminergic inhibition mediated by D2 receptors on lactotroph cells. Dopamine suppresses prolactin gene transcription, secretion, and cellular proliferation. Conversely, thyrotropin-releasing hormone (TRH), vasoactive intestinal peptide (VIP), and serotonin exert stimulatory effects on prolactin release. In hypothyroid states, elevated TRH levels may induce secondary hyperprolactinemia.

Etiology of Hyperprolactinemia in Children

Organic Causes

- Prolactin-secreting pituitary adenomas (microadenomas and macroadenomas)
- Hypothalamic or pituitary stalk lesions
- Congenital malformations of the hypothalamic–pituitary region

Endocrine and Metabolic Causes

- Primary hypothyroidism
- Chronic renal failure
- Chronic liver disease

Pharmacological Causes

- Dopamine receptor antagonists

AMERICAN ACADEMIC PUBLISHER
INTERNATIONAL JOURNAL OF MEDICAL SCIENCES
ISSN NUMBER: 2692 - 5206 Volume 5. No 12. December ,2025

- Antipsychotic and antidepressant medications
- Antiemetic drugs (e.g., metoclopramide)

Idiopathic Hyperprolactinemia

This form is diagnosed when no structural or secondary cause is identified and may be related to altered dopamine receptor sensitivity.

Pathophysiology

Excess prolactin suppresses the hypothalamic–pituitary–gonadal (HPG) axis by inhibiting gonadotropin-releasing hormone (GnRH) pulsatility. This results in reduced luteinizing hormone (LH) and follicle-stimulating hormone (FSH) secretion, leading to hypogonadotropic hypogonadism. Additionally, prolactin interferes with bone remodeling by altering osteoblast and osteoclast activity, predisposing affected children to reduced bone mineral density.

Clinical Manifestations

Prepubertal Children

- Growth retardation
- Headache and visual disturbances
- Emotional lability and fatigue

Pubertal and Adolescent Period

- Delayed or arrested puberty
- Galactorrhea and menstrual irregularities in girls
- Testicular hypotrophy and decreased libido in boys

Long-Term Complications

- Delayed sexual maturation
- Osteopenia and osteoporosis
- Impaired reproductive function in adulthood
- Neurocognitive and psychosocial developmental disturbances

Diagnostic Evaluation

- Repeated measurement of serum prolactin levels
- Exclusion of macroprolactinemia
- Thyroid function tests (TSH, free T4)
- Magnetic resonance imaging (MRI) of the pituitary gland
- Visual field assessment when macroadenoma is suspected

Management Strategies

The primary treatment for hyperprolactinemia is pharmacological therapy with dopamine agonists:

- Cabergoline (first-line therapy)

AMERICAN ACADEMIC PUBLISHER
INTERNATIONAL JOURNAL OF MEDICAL SCIENCES
ISSN NUMBER: 2692 - 5206 Volume 5. No 12. December ,2025

• Bromocriptine (alternative agent)

Surgical or radiotherapeutic interventions are reserved for refractory cases or when mass effects are present.

Conclusion

Hyperprolactinemia in young children is a complex neuroendocrine disorder with potentially serious long-term consequences. Early diagnosis and individualized treatment are essential to preserve normal growth, pubertal development, and future reproductive health. Increased awareness among pediatricians and endocrinologists is critical for timely intervention.

References

1. Qodirov A. A. Endokrinologiya asoslari. Toshkent: Abu Ali ibn Sino nomidagi nashriyot; 2018.

2. Axmedov M. M., Karimova D. R. Bolalar endokrin kasalliklari. Tibbiyot jurnali. 2019;3:45–52.

3. Дедов И. И., Мельниченко Г. А. Эндокринология. Москва: ГЭОТАР-Медиа; 2020.

4. Кузнецова Т. А.Гиперпролактинемия у детей и подростков. Проблемы эндокринологии. 2017;63(4):210–216.

5. Melmed S., Auchus R. J., Goldfine A. B., Rosen C. J. Williams Textbook of Endocrinology. 14th ed. Elsevier; 2020.

6. Sperling M. A. Pediatric Endocrinology. 5th ed. Elsevier; 2021.

7. Lazar L., Kauli R., Phillip M. Prolactinomas in children and adolescents: Clinical features and outcome. Journal of Clinical Endocrinology & Metabolism. 2000;85(2):798–802.

8. Colao A., Savastano S. Medical treatment of prolactinomas. Nature Reviews Endocrinology. 2011;7(5):267–278.

9. Molitch M. E. Diagnosis and treatment of pituitary adenomas. JAMA. 2017;317(5):516–524.