



PREGNANCY OUTCOMES AND HEMOSTATIC CHANGES IN WOMEN WITH HYPERPROLACTINEMIA OF DIFFERENT ORIGINS: THE ROLE OF PREGRAVID PREPARATION

Baltabaeva G.Sh.

Tashkent State Medical University Tashkent, Uzbekistan

gulnoza.gynecologist@gmail.com

Background:

Hyperprolactinemia is a common endocrine disorder in women of reproductive age and is often associated with menstrual irregularities, anovulation, and infertility. The etiologies include hypothyroidism and pituitary microadenomas, each affecting reproductive function and pregnancy outcomes differently. Additionally, hyperprolactinemia may influence the hemostatic system during pregnancy, potentially increasing thrombotic risks.

Aim: To evaluate the impact of hyperprolactinemia of different etiologies (secondary to hypothyroidism vs. pituitary microadenoma) on fertility, hormonal profile, hemostatic parameters during pregnancy, and obstetric outcomes, particularly in relation to pregravid preparation.

Methods: A comparative cohort study was conducted involving 94 pregnant women diagnosed with hyperprolactinemia: Group 1: 52 women with hypothyroidism-induced hyperprolactinemia Group 2: 42 women with pituitary microadenoma-induced hyperprolactinemia. Each group was subdivided based on whether they underwent pregravid preparation (1a/2a) or not (1b/2b). Reproductive history, hormonal profiles (prolactin, estradiol, progesterone, hCG), hemostatic parameters (platelet count, PCT, thrombin time, fibrinogen, APTT, PTI), and obstetric complications were assessed and compared with a control group (n=16).

Results: Based on the analysis, the proportion of women experiencing their first pregnancy among those with hypothyroidism-associated hyperprolactinemia (Group 1) was 34.5% (n=10). In contrast, a significantly higher proportion — 58.3% (n=14) — was observed in women diagnosed with pituitary microadenoma (Group 2). This



difference was statistically significant ($\chi^2=9.5$; $p<0.01$). These findings indicate that, despite the presence of hyperprolactinemia, women with pituitary microadenomas are more likely to achieve their first pregnancy compared to those with hypothyroidism-associated hyperprolactinemia. At the same time, recurrent pregnancy was observed in 65.5% (n=19) of women in Group 1 and in 41.7% (n=10) of women in Group 2. This difference was also statistically significant, with $\chi^2=13.7$; $p<0.001$.

These findings suggest that hyperprolactinemia associated with pituitary microadenoma is more commonly linked to primary reproductive dysfunction, as pregnancy in these women tends to occur for the first time. In contrast, the occurrence of previous pregnancies in patients with hypothyroidism likely reflects a secondary disruption of the hormonal background.

It was found that pregravid preparation in women with hyperprolactinemia has a significant impact on pregnancy outcomes. In Group 1 (women with hyperprolactinemia due to hypothyroidism), pregnancy was observed in 66.7% of cases (n=20) among those who underwent pregravid preparation (subgroup 1a, n=30). In contrast, among those who did not undergo pregravid preparation (subgroup 1b, n=22), pregnancy occurred in only 40.9% of cases (n=9). This difference was statistically significant ($\chi^2=16.3$; $p<0.001$). In Group 2 (women with hyperprolactinemia due to pituitary microadenoma), pregnancy was recorded in 77.3% of cases (n=17) in those who received pregravid preparation (subgroup 2a, n=22), compared to only 35% (n=7) in the subgroup without pregravid preparation (subgroup 2b, n=20). This difference was also highly significant ($\chi^2=51.1$; $p<0.001$). These findings clearly demonstrate the effectiveness of pregravid management in women with hyperprolactinemia syndrome. Pregravid preparation — including stabilization of the hormonal background and correction of vitamin and micronutrient deficiencies — significantly increases the likelihood of achieving and successfully maintaining pregnancy.

Comparison of Hemostasis Parameters During Pregnancy in Women with Hyperprolactinemia:

In the early stages of pregnancy (first trimester), the average platelet count in Group 1 women was $220 \times 10^9/L$, in Group 2 – $205 \times 10^9/L$, while in the control group a



significantly higher value of $285 \times 10^9/L$ was observed. This indicates a trend toward decreased platelet counts in women with hyperprolactinemia. Thrombocrit levels were also lower in the hyperprolactinemia groups: 2.45% in Group 1, 1.85% in Group 2, compared to 2.1% in the control group. Thrombin time was shorter in the patient groups during this stage: 16.2 ± 0.1 sec in Group 1, 14.2 ± 0.1 sec in Group 2, whereas the control group had a longer time of 18.1 ± 0.1 sec, suggesting accelerated coagulation activity under the influence of hyperprolactinemia. Fibrinogen levels were elevated in the patient groups— 3.1 ± 1.2 g/L in Group 1 and 3.9 ± 1.4 g/L in Group 2—compared to 2.6 ± 0.8 g/L in the control group, indicating a hypercoagulable state. Activated Partial Thromboplastin Time (APTT) was also reduced in the patient groups: 30.5 ± 1.4 sec in Group 1, 28.3 ± 1.5 sec in Group 2, while the control group showed 34.2 ± 1.2 sec. Similar trends were maintained in the second trimester. Platelet counts were $219 \times 10^9/L$ in Group 1, $208 \times 10^9/L$ in Group 2, and $280 \times 10^9/L$ in the control group. Thrombocrit values were 2.3% (Group 1), 1.8% (Group 2), and 2.2% (control). Fibrinogen concentrations rose further to 3.9 ± 1.5 g/L in Group 1 and 5.7 ± 1.4 g/L in Group 2, compared to 3.5 ± 1.2 g/L in the control group, clearly indicating hyperfibrinogenemia in Group 2. APTT was further shortened in Group 2 to 26.5 ± 1.2 sec, reinforcing the presence of a prothrombotic state. The Prothrombin Index (PTI) increased to 125% in Group 2, compared to 115% in the control group and 102% in Group 1, showing enhanced coagulation activity associated with pituitary microadenoma-induced hyperprolactinemia. In the third trimester, platelet counts were $219 \times 10^9/L$ in Group 1, $220 \times 10^9/L$ in Group 2, and $290 \times 10^9/L$ in the control group. Although thrombocrit levels were nearly equal (ranging from 2.2–2.4%), significant differences remained in thrombin time and APTT: Group 2 exhibited the shortest thrombin time (12.5 ± 0.2 sec) and APTT (24.1 ± 1.2 sec), indicating a further intensification of the hypercoagulable state. Fibrinogen levels reached 4.8 ± 1.2 g/L in Group 1 and 6.3 ± 1.2 g/L in Group 2, compared to 4.5 ± 1.2 g/L in the control group. These findings confirm the development of hypercoagulation syndrome, most pronounced in Group 2 (patients with pituitary microadenomas). Overall, pregnant women with hyperprolactinemia—especially those with pituitary microadenomas—exhibited prothrombotic changes in the hemostasis system. These alterations manifested as



elevated fibrinogen levels, reduced APTT and thrombin time, and increased PTI. Therefore, regular monitoring of hemostasis parameters during pregnancy is recommended in such patients, and prophylactic anticoagulant therapy should be considered when necessary.

Obstetric Outcomes: Pregravid preparation significantly reduced risks of miscarriage, retrochorionic hematoma, intrauterine growth restriction (IUGR), gestational hypertension, and preeclampsia in both groups. For example, miscarriage risk in Group 1a was 50% vs. 77.8% in 1b ($p<0.001$); in Group 2a – 47% vs. 71.4% in 2b ($p<0.01$).

Conclusion:

Pregravid preparation markedly improved pregnancy outcomes: in women with hypothyroidism, pregnancy rates increased from 40.9% (without preparation) to 66.7% (with preparation); in the microadenoma group, from 35% to 77.3% ($p<0.001$). It also reduced miscarriage risk (Group 1a: 50% vs. 77.8%; Group 2a: 47% vs. 71.4%). Hemostatic changes indicated a hypercoagulable state, especially in the microadenoma group: fibrinogen increased to 6.3 g/L, APTT shortened to 24.1 sec, and thrombin time to 12.5 sec in the third trimester. These findings support the need for routine pregravid care and coagulation monitoring in pregnant women with hyperprolactinemia, particularly those with pituitary microadenomas.

References:

1. Global Consensus Recommendations on Prevention and Management of Nutritional Rickets / C.F. Munns [et al.] // The Journal of Clinical Endocrinology & Metabolism. – 2016. – Vol. 101, № 2. – P. 394-415.
2. Kaluzny, M. Hyperprolactinemia: etiology, clinical symptoms, and therapy / M. Kaluzny, M. Bolanowski // Postepy. Hig. Med. Dosw. – 2005. - Vol.59. – P. 20-27.