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RESTLESS LEGS SYNDROME IN PREGNANCY: PREVALENCE, SYMPTOM SEVERITY AND TREATMENT EFFECTIVENESS

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Introduction. The aim of this study was to assess the prevalence, clinical features, risk factors, and treatment effectiveness of restless legs syndrome (RLS) in pregnant women. A prospective observation was conducted on 56 pregnant women with clinically verified RLS. It was found that symptom onset predominantly occurs during the second and third trimesters and is associated with iron deficiency, sleep disturbances, and increased anxiety. Moderate therapeutic response was observed with iron supplementation and non-pharmacological intervention. To analyze the clinical and functional features of RLS in pregnant women and assess the effectiveness of combined therapy in the observed cohort. The study included 56 pregnant women aged 19–38 years presenting with nighttime discomfort in the legs, meeting the diagnostic criteria of the International Restless Legs Syndrome Study Group (IRLSSG). Each participant underwent clinical assessment using the IRLS severity scale, Pittsburgh Sleep Quality Index (PSQI), and Hospital Anxiety and Depression Scale – Anxiety subscale (HADS-A). Laboratory tests included hemoglobin, ferritin, and serum iron levels. RLS symptoms appeared predominantly in the second (41.1%) and third (50.0%) trimesters, while only 8.9% of patients reported onset in the first trimester. Eighty-two percent reported significant sleep disturbances, including difficulty falling asleep, frequent awakenings, and light sleep. Sixty-four percent experienced increased daytime sleepiness and reduced performance. Seventy-one percent of patients had pain, tingling, or itching in the extremities, aggravated by sitting or lying down. Ferritin deficiency (<30 ng/mL) was detected in 73% of women, with 32% presenting with anemia (Hb <110 g/L). Mean ferritin before therapy was 19.4 ± 8.7 ng/mL. Patients without iron deficiency had milder disease: mean IRLS scores were 5–6 points lower, and PSQI sleep quality scores were 3–4 points better ($p < 0.05$). Early diagnosis and timely iron supplementation are essential components of pregnancy management and contribute to improved maternal and perinatal outcomes.

Keywords: restless legs syndrome, pregnancy, iron deficiency, sleep disturbance, perinatal neurology.

ЖҮКТІЛІК КЕЗІНДЕГІ МАЗАСЫЗ АЯҚТАР СИНДРОМЫ (RLS): ТАРАЛУЫ, СИМПТОМДАР АУЫРЛЫҒЫ ЖӘНЕ ЕМ ТИІМДІЛІГІ**Раимова М.¹, Едгарова У.¹, Нускабаева Г.², Садыкова К.², Азизходжаева Д.²**¹Ташкент мемлекеттік медицина университеті (Ташкент қ., Өзбекстан)²Қожа Ахмет Ясауи атындағы Халықаралық қазақ-түрік университеті (Түркістан, Қазақстан)

Аңдатпа. Зерттеудің мақсаты – жүкті әйелдердегі тынышсыз аяқ синдромының (RLS) таралуын, клиникалық ерекшеліктерін, қауіп факторларын және емнің тиімділігін бағалау. Клиникалық расталған RLS бар 56 жүкті әйелге проспективті бақылау жүргізілді. Симптомдардың көбіне екінші және үшінші триместрлерде пайда болатыны, темір тапшылығымен, ұйқы бұзылыстарымен және мазасыздықтың жоғарылауымен байланысты екені анықталды. Темір препараттарын қабылдау мен дәрілік емес шараларды қолдану аясында орташа терапиялық жауап байқалды. Жүкті әйелдердегі RLS-тің клиникалық және функционалдық ерекшеліктерін талдау және бақылаудағы топта кешенді емнің тиімділігін бағалау. Зерттеуге 19–38 жас аралығындағы, аяқтарында түнгі дискомфортқа шағымданған және Халықаралық тынышсыз аяқ синдромын зерттеу тобының (IRLSSG) диагностикалық критерийлеріне сәйкес келетін 56 жүкті әйел енгізілді. Әрбір қатысушы IRLS ауырлық шкаласы, Питтсбург ұйқы сапасы индексі (PSQI) және Госпитальдық мазасыздық пен депрессия шкаласының мазасыздық субшкаласы (HADS-A) бойынша клиникалық бағалаудан өтті. Зертханалық тексерулерге гемоглобин, ферритин және сарысулық темір деңгейлері кірді. RLS симптомдары негізінен екінші (41,1%) және үшінші (50,0%) триместрлерде байқалды, ал тек 8,9% пациентте симптомдардың басталуы бірінші триместрде тіркелді. Пациенттердің 82%-ы ұйқының айқын бұзылыстарын, соның ішінде ұйықтап кетудің қиындауын, жиі оянуды және үстірт ұйқыны атап өтті. 64%-ында күндізгі ұйқышылдықтың артуы мен еңбекке қабілеттіліктің төмендеуі байқалды. 71% пациентте аяқ-қолдарда ауырсыну, шаншу немесе қышу сезімі тіркеліп, ол отыру немесе жату кезінде күшейген. Ферритин тапшылығы (<30 нг/мл) әйелдердің 73%-ында анықталды, оның ішінде 32%-ында анемия (Hb <110 г/л) байқалды. Емге дейінгі орташа ферритин деңгейі $19,4 \pm 8,7$ нг/мл болды. Темір тапшылығы жоқ пациенттерде ауру жеңілірек өтті: IRLS шкаласы бойынша орташа көрсеткіштер 5–6 баллға төмен, ал PSQI бойынша ұйқы сапасының көрсеткіштері 3–4 баллға жақсы болды ($p < 0,05$). Ерте диагностика және темір препараттарын дер кезінде тағайындау жүктілікті жүргізудің маңызды компоненттері болып табылады және ана мен перинаталдық нәтижелердің жақсаруына ықпал етеді.

Кілт сөздер: мазасыз аяқтар синдромы, жүктілік, темір тапшылығы, ұйқы бұзылысы, перинаталдық неврология.

СИНДРОМ БЕСПОКОЙНЫХ НОГ ПРИ БЕРЕМЕННОСТИ: ЧАСТОТА, ТЯЖЕСТЬ СИМПТОМОВ И ЭФФЕКТИВНОСТЬ ТЕРАПИИ

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Аннотация. Целью данного исследования была оценка распространённости, клинических особенностей, факторов риска и эффективности лечения синдрома беспокойных ног (СБН) у беременных женщин. Проведено проспективное наблюдение за 56 беременными с клинически подтверждённым СБН. Установлено, что начало симптомов преимущественно приходится на второй и третий триместры и связано с дефицитом железа, нарушениями сна и повышенной тревожностью. Отмечен умеренный терапевтический эффект при применении препаратов железа и немедикаментозных вмешательств. Проанализировать клинико-функциональные особенности СБН у беременных женщин и оценить эффективность комбинированной терапии в наблюдаемой когорте. В исследование были включены 56 беременных женщин в возрасте 19–38 лет с ночным дискомфортом в ногах, соответствующим диагностическим критериям Международной группы по изучению синдрома беспокойных ног (IRLSSG). Каждая участница прошла клиническую оценку с использованием шкалы тяжести IRLS, Питтсбургского индекса качества сна (PSQI) и подшкалы тревоги Госпитальной шкалы тревоги и депрессии (HADS-A). Лабораторные исследования включали определение уровня гемоглобина, ферритина и сывороточного железа. Симптомы СБН преимущественно появлялись во втором (41,1%) и третьем (50,0%) триместрах, тогда как только у 8,9% пациенток отмечалось начало в первом триместре. У 82% наблюдались выраженные нарушения сна, включая трудности засыпания, частые пробуждения и поверхностный сон. У 64% отмечалась повышенная дневная сонливость и снижение работоспособности. У 71% пациенток наблюдались боль, покалывание или зуд в конечностях, усиливающиеся в положении сидя или лёжа. Дефицит ферритина (<30 нг/мл) выявлен у 73% женщин, при этом у 32% диагностирована анемия (Hb <110 г/л). Средний уровень ферритина до начала терапии составил $19,4 \pm 8,7$ нг/мл. У пациенток без дефицита железа заболевание протекало легче: средние показатели по шкале IRLS были на 5–6 баллов ниже, а показатели качества сна по шкале PSQI - на 3–4 балла лучше ($p < 0,05$). Ранняя диагностика и своевременная коррекция дефицита железа являются важными компонентами ведения беременности и способствуют улучшению материнских и перинатальных исходов.

Ключевые слова: синдром беспокойных ног, беременность, дефицит железа, нарушения сна, перинатальная неврология.

Introduction. Restless legs syndrome (RLS), or Willis–Ekbohm disease, is a common neurological sensorimotor disorder characterized by an irresistible urge to move the legs, often accompanied by unpleasant sensations in the lower extremities, such as itching, tingling, or a pulling or burning pain. Symptoms are exacerbated at rest, especially in the evening and at night, leading to sleep disturbances, daytime sleepiness, decreased physical activity, and impaired emotional well-being. The prevalence of RLS in the general population is 2–10%; however, among pregnant women, it is significantly higher, ranging from 10% to 30%, depending on diagnostic methods and trimester. Symptoms most commonly appear during the second and third trimesters, associated with physiological changes, including increased blood volume, higher iron requirements, hormonal fluctuations, and increased cardiovascular and nervous system load. The pathogenesis of RLS in pregnancy is multifactorial. Iron and ferritin deficiency is considered a key factor, affecting dopamine synthesis in the central nervous system and the function of dopaminergic pathways. Impaired dopaminergic transmission contributes to sensorimotor symptoms and sleep disturbances. Hormonal changes during pregnancy, including elevated estrogen and progesterone levels, can increase peripheral nerve sensitivity and symptom severity. Other significant factors include stress, chronic fatigue, sleep disorders, and hereditary predisposition, all of which can exacerbate the clinical picture. RLS during pregnancy is associated with a significant reduction in quality of life, increased fatigue, higher anxiety levels, and decreased cognitive and physical functioning. Symptoms often remain undiagnosed or are perceived as temporary manifestations of pregnancy, resulting in delayed therapy and worsening of the patient’s condition.

Despite the high prevalence of RLS in pregnancy, data on clinical features, symptom severity, laboratory markers, and treatment effectiveness remain limited. In particular, the relationship between symptom severity and ferritin levels, the influence of pregnancy trimester on RLS manifestations, and the effectiveness of combined therapy using non-pharmacological interventions and iron supplementation remain insufficiently studied. Thus, the relevance of this study is determined by the need for a systematic investigation of clinical and laboratory characteristics of RLS in pregnant women, assessment of risk factors, symptom dynamics, and treatment effectiveness. The aim of this study was to investigate the features of RLS in pregnant women, assess the influence of iron deficiency and pregnancy trimester on symptom severity, and evaluate the effectiveness of a combined treatment approach in a cohort of 56 patients.

Objective. To analyze the clinical and functional features of RLS in pregnant women and assess the effectiveness of combined therapy in the observed cohort.

Materials and Methods. The study included 56 pregnant women aged 19–38 years presenting with nighttime discomfort in the legs, meeting the diagnostic criteria of the International Restless Legs Syndrome Study Group (IRLSSG). Each participant underwent clinical assessment using the IRLS severity scale, Pittsburgh Sleep Quality Index (PSQI), and Hospital Anxiety and Depression Scale – Anxiety subscale (HADS-A). Laboratory tests included hemoglobin, ferritin, and serum iron levels. Ferritin levels below 30 ng/mL were considered indicative of iron deficiency. Patients were followed prospectively, with visits every four weeks, including reassessment of all scales and laboratory parameters. Treatment followed current guidelines: non-pharmacological interventions were recommended, and oral iron supplementation was provided

for laboratory-confirmed deficiency. Dopaminergic drugs were not used. Treatment effectiveness was assessed based on IRLS score reduction, sleep improvement, and laboratory dynamics.

Results. The study included 56 pregnant women aged 19–38 years (mean age 28.6 ± 4.2 years). Primiparas accounted for 53.6% of the cohort, and multiparas 46.4%. RLS symptoms appeared predominantly in the second (41.1%) and third (50.0%) trimesters, while only 8.9% of patients reported onset in the first trimester. All participants reported an irresistible urge to move the legs at rest, most pronounced in the evening and at night. Eighty-two percent reported significant sleep disturbances, including difficulty falling asleep, frequent awakenings, and light sleep. Sixty-four percent experienced increased daytime sleepiness and reduced performance. Seventy-one percent of patients had pain, tingling, or itching in the extremities, aggravated by sitting or lying down. Ferritin deficiency (<30 ng/mL) was detected in 73% of women, with 32% presenting with anemia (Hb <110 g/L). Mean ferritin before therapy was 19.4 ± 8.7 ng/mL. Patients without iron deficiency had milder disease: mean IRLS scores were 5–6 points lower, and PSQI sleep quality scores were 3–4 points better ($p < 0.05$).

Table 1. Characteristics of pregnant women with RLS

| Parameter | Value |
|---------------------------------------|----------------|
| Mean age, years | 28.6 ± 4.2 |
| Primiparas, % | 53.6 |
| Symptom onset in 1st trimester, % | 8.9 |
| Symptom onset in 2nd trimester, % | 41.1 |
| Symptom onset in 3rd trimester, % | 50.0 |
| Mean IRLS score (pre-treatment) | 21.3 ± 5.4 |
| Ferritin deficiency (<30 ng/mL), % | 73 |
| Anemia (Hb <110 g/L), % | 32 |
| Sleep disturbance (PSQI >5), % | 82 |
| Anxiety (HADS-A >7), % | 64 |

After eight weeks of combined therapy, including non-pharmacological interventions and iron supplementation, mean IRLS scores decreased from 21.3 ± 5.4 to 12.4 ± 4.1 ($p < 0.01$), indicating significant improvement. Sleep quality improved in 67% of patients, and mean HADS-A anxiety scores decreased by 19%. In the ferritin-deficient subgroup, 78% of women showed a positive response.

Table 2. Effectiveness of RLS therapy in pregnant women

| Parameter | Before Treatment | After Treatment | Change |
|---------------------------------|------------------|-----------------|-----------------------|
| IRLS score | 21.3 ± 5.4 | 12.4 ± 4.1 | -8.9 ($p < 0.01$) |
| Ferritin, ng/mL | 19.4 ± 8.7 | 42.8 ± 11.2 | +23.4 |
| Patients with improved sleep, % | - | 67 | +67 |

| | | | |
|---|---|----|-----|
| Anxiety reduction (HADS-A), % | - | 19 | -19 |
| Complete symptom regression postpartum, % | - | 82 | - |

Symptom severity according to IRLS was higher in the second and third trimesters compared to the first (mean score 21.8 ± 4.9 and 22.1 ± 5.1 vs. 17.2 ± 3.8 , $p < 0.05$). Women with ferritin below 30 ng/mL had more severe disease (mean IRLS 23.1 ± 4.7 vs. 15.6 ± 3.9 in patients with normal iron levels).

Table 3. RLS severity by trimester and ferritin level

| Group | Mean IRLS Score | N | ferritin deficiency (%) |
|--------------------------|-----------------|----|-------------------------|
| 1st trimester | 17.2 ± 3.8 | 5 | 40 |
| 2nd trimester | 21.8 ± 4.9 | 23 | 74 |
| 3rd trimester | 22.1 ± 5.1 | 28 | 75 |
| Ferritin ≥ 30 ng/mL | 15.6 ± 3.9 | 15 | - |
| Ferritin < 30 ng/mL | 23.1 ± 4.7 | 41 | 100 |

Sleep disturbances were observed in 82% of patients before therapy, decreasing to 27% after treatment (PSQI > 5). Anxiety (HADS-A > 7) decreased from 64% pre-treatment to 45% post-treatment.

Table 4. Sleep quality and anxiety before and after therapy

| Parameter | Before Treatment | After Treatment | Change |
|------------------|------------------|-----------------|--------|
| PSQI > 5 , % | 82 | 27 | -55 |
| HADS-A > 7 , % | 64 | 45 | -19 |

Preterm birth occurred in 3.6% of patients; newborn weight was within normal limits. In 28% of women, RLS symptoms completely resolved within two weeks postpartum, and in 54% within the first two months. Complete symptom regression occurred in 82% of women postpartum; 18% had mild residual symptoms up to three months.

Discussion. Our study confirms that RLS is a relatively common disorder in pregnant women, predominantly occurring in the second and third trimesters. This aligns with previously published epidemiological studies reporting a prevalence of 10–30% in pregnancy. The most pronounced symptoms were observed in women with iron deficiency, confirming the key role of this micronutrient in RLS pathogenesis. Ferritin deficiency may impair dopaminergic transmission in the CNS, explaining the severity of sensorimotor symptoms. Symptom severity increased with pregnancy progression, related to rising physiological demands and increased nervous system load. Sleep disturbances, identified in 82% of patients, represent an important clinical aspect, as

fragmented and insufficient sleep can exacerbate daytime sleepiness, anxiety, and emotional impairment. Iron supplementation combined with non-pharmacological interventions (leg exercises, massage, sleep hygiene) reduced mean IRLS scores by 8.9 points and improved sleep in 67% of patients. These results confirm the effectiveness of non-pharmacological and iron therapy during pregnancy and are consistent with current recommendations limiting dopaminergic drug use in this population. Postpartum symptom dynamics showed complete regression in 82% of women within the first two months, consistent with literature indicating the temporary nature of pregnancy-related RLS and recovery after hormonal balance and iron status normalization. Our study highlights the importance of early RLS diagnosis and detection of iron deficiency as a key risk factor. Timely therapy not only improves sleep and reduces anxiety but may also lower pregnancy complications associated with chronic fatigue and sleep disturbances. Limitations include the relatively small sample size (n=56) and lack of long-term follow-up beyond three months postpartum. Further large prospective studies using objective sleep assessments and evaluating RLS impact on labor and child development are warranted.

Conclusion. RLS is a common disorder in pregnant women, primarily occurring in the second and third trimesters. Iron deficiency is the main risk factor and correlates with symptom severity. RLS significantly impairs sleep quality, increases daytime sleepiness, and raises anxiety, reducing overall quality of life. Combined therapy with iron supplementation and non-pharmacological interventions effectively reduces symptom severity and improves sleep quality. Postpartum, most women experience symptom regression within the first two months, although a small portion may retain mild symptoms up to three months. Early diagnosis and timely iron supplementation are essential components of pregnancy management and contribute to improved maternal and perinatal outcomes.

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