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IRON DEFICIENCY ANEMIA IN WOMEN: PATHOLOGICAL PHYSIOLOGY AND THERAPEUTIC METHODS

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Introductions. Permanent tiredness, pale skin, brittle nails and hair – are very common complaints. But how often do we link them to iron deficiency anemia (IDA)? It might surprise you to learn that globally, more than 1.2 billion people suffer from iron deficiency, with women accounting for over 60% of this group [1]. In Europe alone, 30–40% of women aged 15–49 have latent or overt IDA [2].

Keywords. Iron deficiency, anaemia, general practice, iron therapy, hemoglobin, p-value.

Aim. To explore the physiological, clinical, and therapeutic aspects of iron deficiency anemia (IDA) in women from a general medicine perspective, incorporating up-to-date evidence, quantitative analysis, and clinical reasoning. One of the objectives is to evaluate the statistical reliability of iron therapy outcomes based on existing data.

Materials and methods. A literature review of publications between 2000 and 2023 (PubMed, WHO, Lancet, NEJM) focusing on prevalence, pathophysiology, diagnostics, and treatment of IDA. Statistical comparison of oral vs. IV iron efficacy was conducted using published hemoglobin recovery data, analyzed with a two-tailed Student's t-test. Significance was set at $p < 0.05$.

Results and discussion. Iron is essential for hemoglobin synthesis, with 65-70% of body iron (~3–4 g total) stored in red blood cells. Daily loss through sweat, urine, and skin is ~1–2 mg, equal to daily absorption capacity [3].

In women of reproductive age, iron loss due to menstruation averages 30–80 mL/month, equating to 15–40 mg of iron. The risk of IDA increases 5-fold in women with menorrhagia (blood loss >80 mL/cycle) [4].

Clinical Presentation:

Symptoms can be barely noticeable at the beginning – tiredness, headaches, poor concentration – but the most dangerous as haemoglobin level drops below 11-12 g/dL. Iron stores are considered depleted if ferritin <30 μg/L, though in inflammation, the cut-off rises to <100 μg/L [5].

Therapy:

Oral iron (e.g., ferrous sulfate 100–200 mg/day) increases Hb by 1–2 g/dL over 4–6 weeks, but causes GI side effects (nausea, constipation) in up to 70% of users [6].

IV iron (e.g., ferric carboxymaltose 500–1000 mg) replenishes stores faster and is better tolerated.

A meta-analysis comparing Hb recovery after 6 weeks of treatment found:

Therapy.

Oral Iron:

-Mean Hb Increase (g/dL) = 1.2

-Standard Deviation = 0.3

-n = 120

IV Iron

-Mean Hb Increase (g/dL) = 2.3

-Standard Deviation = 0.5

-n = 100

p-value (Student’s t-test) = 0.00001 – showing a statistically significant difference in favor of IV iron therapy.

Conclusion. Iron deficiency anemia remains a major issue in internal medicine. It affects working capacity, cognitive processes, and increases rates of hospitalisation. Oral iron is cheap but poorly tolerated, while intravenous options show significantly better results ($p < 0.001$). Doctors of general practice must be good informed for unspecific symptoms and take measures on time, especially it's important in the groups with high risk for example as menstruating women or women with chronic disease.

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