PP21.3. METABOLIČKI ASPEKTI NEPLODNOSTI: SAVREMENI IZAZOVI U REPRODUKTIVNOJ MEDICINI

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Metaboličko zdravlje se sve više smatra jednim od ključnih faktora koji određuju reproduktivni potencijal žena i muškaraca. Rastuća prevalencija gojaznosti, insulinske rezistencije, metaboličkog sindroma i sindroma policističnih jajnika (PCOS) dovela je do intenzivnijeg proučavanja njihovog uticaja na reproduktivno zdravlje i ishode asistirane reprodukcije. Patofiziološki efekti ovih metaboličkih poremećaja zasnivaju se na složenoj interakciji poremećaja hormonskog statusa, hronične inflamacije niskog stepena, oksidativnog stresa i izmenjene sekrecije adipokina. Gojaznost je povezana sa smanjenim kvalitetom jajnih ćelija i spermatozoida, poremećajem ovulacije, izmenjenom receptivnošću endometrijuma i povećanim rizikom od nepovoljnih reproduktivnih ishoda. Insulinska rezistencija i prateća hiperinsulinemija doprinose poremećaju steroidogeneze, hiperandrogenizmu i narušenoj folikulogenezi, dok metabolički sindrom dodatno pogoršava reproduktivni potencijal usled udruženog delovanja abdominalne gojaznosti, dislipidemije i poremećene glikoregulacije. Poseban značaj pripisuje se PCOS-u, heterogenom endokrino-metaboličkom poremećaju koji povezuje reproduktivne, metaboličke i inflamatorne faktore i predstavlja vodeći uzrok anovulatorne neplodnosti. Metabolički poremećaji ne utiču samo na reproduktivnu funkciju žena, već mogu nepovoljno delovati i na muški fertilitet kroz promene hormonske regulacije, poremećenu spermatogenezu i oksidativna oštećenja spermatozoida. Savremeni pristupi lečenju neplodnosti zahtevaju integraciju metaboličke procene u rutinsku reproduktivnu dijagnostiku i primenu multidisciplinarnih terapijskih strategija. Sveobuhvatnije sagledavanje uticaja metaboličkih poremećaja na reproduktivnu funkciju može omogućiti razvoj ciljanih preventivnih i terapijskih pristupa usmerenih ka očuvanju fertiliteta i poboljšanju reproduktivnih ishoda.

PP21.3. METABOLIC DISORDERS AND INFERTILITY: CURRENT CHALLENGES IN REPRODUCTIVE MEDICINE

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Metabolic health is increasingly recognized as one of the key determinants of reproductive potential in both women and men. The rising prevalence of obesity, insulin resistance, metabolic syndrome, and polycystic ovary syndrome (PCOS) has intensified research into their impact on reproductive health and assisted reproductive technology outcomes. The pathophysiological effects of these metabolic disorders are mediated through a complex interplay of hormonal dysregulation, chronic low-grade inflammation, oxidative stress, and altered adipokine secretion. Obesity has been associated with reduced oocyte and sperm quality, ovulatory dysfunction, impaired endometrial receptivity, and an increased risk of adverse reproductive outcomes. Insulin resistance and the accompanying hyperinsulinemia contribute to disrupted steroidogenesis, hyperandrogenism, and impaired folliculogenesis, while metabolic syndrome further compromises reproductive potential through the combined effects of abdominal obesity, dyslipidemia, and impaired glucose homeostasis. Particular attention has been focused on PCOS, a heterogeneous endocrine–metabolic disorder that integrates reproductive, metabolic, and inflammatory abnormalities and represents the leading cause of anovulatory infertility. Metabolic disorders affect not only female reproductive function but may also impair male fertility through alterations in hormonal regulation, disrupted spermatogenesis, and increased oxidative damage to spermatozoa. Contemporary approaches to infertility management require the integration of metabolic assessment into routine reproductive evaluation and the implementation of multidisciplinary therapeutic strategies. A more comprehensive understanding of the impact of metabolic disorders on reproductive function may facilitate the development of targeted preventive and therapeutic interventions aimed at preserving fertility and improving reproductive outcomes.