

The Effect of Methotrexate Systemic Treatment on Ovarian Reserve: A Systematic Review and Meta-analysis

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ABSTRACT

Objectives: To assess anti-Mullerian hormone (AMH) levels before and after Methotrexate (MTX) treatment to get an insight into ovarian function following therapy and compare the effect of the single and multi-dose therapy of MTX.

Methods: A thorough search was conducted for pertinent literature using PubMed, SCOPUS, Web of Science, Science Direct, and Wiley Library. Comprehensive meta-analysis software was used for all analyses and assessed statistical heterogeneity with the I^2 index.

Results: Our results included ten studies with a total of 354 women who received MTX therapy. The follow-up duration ranged from 1 month to 23 months. Our analysis showed a significant reduction in the AMH level following MTX therapy (SMD=-0.393, 95% CI 0.197, 0.032, $p=0.028$). When comparing the single and multi-MTX dosages on AMH levels, both showed insignificant reduction; (SMD=-0.301, 95% CI 0.301, 0.091, $p=0.318$) and (SMD=-0.516, 95% CI 0.276, 0.076, $p=0.061$), respectively.

Conclusion: This analysis demonstrated that MTX significantly affects the AMH levels; however, there was no reported difference according to the treatment regimens. This topic is arising and there is a lack of data about it which requires more future prospective and RCTs to interpret.

Keywords: Methotrexate; Anti-mullerian hormone; Ovarian reserve; Meta-analysis; Systematic review.

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