

18

 참고 문헌

1. Group EEPGD. Recurrent pregnancy loss, 2017; <https://www.eshre.eu/Guidelines-and-Legal/Guidelines/Recurrent-pregnancy-loss/>.
2. RPL EGG0, Bender Atik R, Christiansen OB, et al. ESHRE guideline: recurrent pregnancy loss. *Hum Reprod Open* 2018;2018(2):hoy004.
3. Practice Committee of American Society for Reproductive M. Definitions of infertility and recurrent pregnancy loss: a committee opinion. *Fertil Steril* 2013;99(1):63.
4. van Dijk MM, Kolte AM, Limpens J, et al. Recurrent pregnancy loss: diagnostic workup after two or three pregnancy losses? A systematic review of the literature and meta-analysis. *Hum Reprod Update* 2020;26(3):356-67.
5. Larsen EC, Christiansen OB, Kolte AM, Macklon N. New insights into mechanisms behind miscarriage. *BMC Med* 2013;11:154.
6. Rasmak Roepke E, Matthiesen L, Rylance R, Christiansen OB. Is the incidence of recurrent pregnancy loss increasing? A retrospective register-based study in Sweden. *Acta Obstet Gynecol Scand* 2017;96(11):1365-72.
7. Toth B, Wurfel W, Bohlmann M, et al. Recurrent Miscarriage: Diagnostic and Therapeutic Procedures. Guideline of the DGGG, OEGGG and SGGG (S2k-Level, AWMF Registry Number 015/050). *Geburtshilfe Frauenheilkd* 2018;78(4):364-81.
8. Brigham SA, Conlon C, Farquharson RG. A longitudinal study of pregnancy outcome following idiopathic recurrent miscarriage. *Hum Reprod* 1999;14(11):2868-71.
9. Ogasawara M, Aoki K, Okada S, Suzumori K. Embryonic karyotype of abortuses in relation to the number of previous miscarriages. *Fertil Steril* 2000;73(2):300-4.
10. Ward KJ. Genetic factors in recurrent pregnancy loss. *Semin Reprod Med* 2000;18(4):425-32.
11. Zhu X, Li J, Zhu Y, et al. Application of chromosomal microarray analysis in products of miscarriage. *Mol Cytogenet* 2018;11:44.
12. Philipp T, Philipp K, Reiner A, Beer F, Kalousek DK. Embryoscopic and cytogenetic analysis of 233 missed abortions: factors involved in the pathogenesis of developmental defects of early failed pregnancies. *Hum Reprod* 2003;18(8):1724-32.
13. Kline J, Kinney A, Levin B, Warburton D. Trisomic pregnancy and earlier age at menopause. *Am J Hum Genet* 2000;67(2):395-404.
14. van Montfrans JM, Dorland M, Oosterhuis GJ, van Vugt JM, Rekers-Mombarg LT, Lambalk CB. Increased concentrations of follicle-stimulating hormone in mothers of children with Down's syndrome. *Lancet* 1999;353(9167):1853-4.
15. Gianaroli L, Magli MC, Fiorentino F, Baldi M, Ferraretti AP. Clinical value of preimplantation genetic diagnosis. *Placenta* 2003;24 Suppl B:S77-83.
16. Menten B, Swerts K, Delle Chiaie B, et al. Array comparative genomic hybridization and flow cytometry analysis of spontaneous abortions and mors in utero samples. *BMC Med Genet* 2009;10:89.
17. Maxwell SM, Colls P, Hodes-Wertz B, et al. Why do euploid embryos miscarry? A case-control study comparing the rate of aneuploidy within presumed euploid embryos that resulted in miscarriage or live birth using next-generation sequencing. *Fertil Steril* 2016;106(6):1414-1419 e1415.
18. Friedenthal J, Maxwell SM, Munne S, et al. Next generation sequencing for preimplantation genetic screening improves pregnancy outcomes compared with array comparative genomic hybridization in single thawed euploid embryo transfer cycles. *Fertil Steril* 2018;109(4):627-32.
19. Spinella F, Fiorentino F, Biricik A, et al. Extent of chromo-

- somal mosaicism influences the clinical outcome of in vitro fertilization treatments. *Fertil Steril* 2018;109(1):77-83.
20. Munne S, Wells D. Detection of mosaicism at blastocyst stage with the use of high-resolution next-generation sequencing. *Fertil Steril* 2017;107(5):1085-91.
 21. Lee S, Kim J, Jang B, et al. Fluctuation of peripheral blood T, B, and NK cells during a menstrual cycle of normal healthy women. *J Immunol* 2010;185(1):756-62.
 22. Sojka DK. Uterine Natural Killer Cell Heterogeneity: Lessons From Mouse Models. *Front Immunol* 2020;11:290.
 23. Vento-Tormo R, Efremova M, Botting RA, et al. Single-cell reconstruction of the early maternal-fetal interface in humans. *Nature* 2018;563(7731):347-53.
 24. Wu F, Tian FJ, Lin Y, Xu WM. Oxidative Stress: Placenta Function and Dysfunction. *Am J Reprod Immunol* 2016;76(4):258-71.
 25. Miller D, Motomura K, Garcia-Flores V, Romero R, Gomez-Lopez N. Innate Lymphoid Cells in the Maternal and Fetal Compartments. *Front Immunol* 2018;9:2396.
 26. Beer AE, Kwak JY, Ruiz JE. Immunophenotypic profiles of peripheral blood lymphocytes in women with recurrent pregnancy losses and in infertile women with multiple failed in vitro fertilization cycles. *Am J Reprod Immunol* 1996;35(4):376-82.
 27. Kwak JY, Beaman KD, Gilman-Sachs A, Ruiz JE, Schewitz D, Beer AE. Up-regulated expression of CD56+, CD56+/CD16+, and CD19+ cells in peripheral blood lymphocytes in pregnant women with recurrent pregnancy losses. *Am J Reprod Immunol* 1995;34(2):93-9.
 28. Lee SK, Na BJ, Kim JY, et al. Determination of clinical cellular immune markers in women with recurrent pregnancy loss. *Am J Reprod Immunol* 2013;70(5):398-411.
 29. King K, Smith S, Chapman M, Sacks G. Detailed analysis of peripheral blood natural killer (NK) cells in women with recurrent miscarriage. *Hum Reprod* 2010;25(1):52-8.
 30. Seshadri S, Sunkara SK. Natural killer cells in female infertility and recurrent miscarriage: a systematic review and meta-analysis. *Hum Reprod Update* 2014;20(3):429-38.
 31. Kieffer TEC, Laskewitz A, Scherjon SA, Faas MM, Prins JR. Memory T Cells in Pregnancy. *Front Immunol* 2019;10:625.
 32. Zhang YH, Sun HX. Immune checkpoint molecules in pregnancy: Focus on regulatory T cells. *Eur J Immunol* 2020;50(2):160-9.
 33. Mor G, Aldo P, Alvero AB. The unique immunological and microbial aspects of pregnancy. *Nat Rev Immunol* 2017;17(8):469-82.
 34. Kwak-Kim JY, Chung-Bang HS, Ng SC, et al. Increased T helper 1 cytokine responses by circulating T cells are present in women with recurrent pregnancy losses and in infertile women with multiple implantation failures after IVF. *Hum Reprod* 2003;18(4):767-73.
 35. Lee SK, Kim JY, Hur SE, et al. An imbalance in interleukin-17-producing T and Foxp3+ regulatory T cells in women with idiopathic recurrent pregnancy loss. *Hum Reprod* 2011;26(11):2964-2971.
 36. Lee SK, Kim JY, Lee M, Gilman-Sachs A, Kwak-Kim J. Th17 and regulatory T cells in women with recurrent pregnancy loss. *Am J Reprod Immunol* 2012;67(4):311-8.
 37. Zhang T, Zhu W, Zhao Y, et al. Early transient suppression of immune checkpoint proteins T-cell immunoglobulin mucin-3 and programmed cell death-1 in peripheral blood lymphocytes after blastocyst transfer is associated with successful implantation. *Fertil Steril* 2020.
 38. Wang WJ, Salazar Garcia MD, Deutsch G, et al. PD-1 and PD-L1 expression on T-cell subsets in women with unexplained recurrent pregnancy losses. *Am J Reprod Immunol* 2020;83(5):e13230.
 39. Han AR, Han JW, Lee SK. Inherited thrombophilia and anticoagulant therapy for women with reproductive failure. *Am J Reprod Immunol* 2021;85(4):e13378.
 40. Palomba S, Falbo A, Orio F, Jr., Zullo F. Effect of preconceptual metformin on abortion risk in polycystic ovary syndrome: a systematic review and meta-analysis of randomized controlled trials. *Fertil Steril* 2009;92(5):1646-58.
 41. Ikuma S, Sato T, Sugiura-Ogasawara M, Nagayoshi M, Tanaka A, Takeda S. Preimplantation Genetic Diagnosis and Natural Conception: A Comparison of Live Birth Rates in Patients with Recurrent Pregnancy Loss Associated with Translocation. *PLoS One* 2015;10(6):e0129958.
 42. Franssen MT, Musters AM, van der Veen F, et al. Reproductive outcome after PGD in couples with recurrent miscarriage carrying a structural chromosome abnormality: a systematic review. *Hum Reprod Update* 2011;17(4):467-75.
 43. Venetis CA, Papadopoulos SP, Campo R, Gordts S, Tarlatzis BC, Grimbizis GF. Clinical implications of congenital uterine anomalies: a meta-analysis of comparative studies. *Reprod Biomed Online* 2014;29(6):665-83.
 44. Chan S, Boelaert K. Optimal management of hypothyroidism, hypothyroxinaemia and euthyroid TPO antibody positivity preconception and in pregnancy. *Clin Endocrinol (Oxf)* 2015;82(3):313-26.
 45. Jakubowicz DJ, Iuorno MJ, Jakubowicz S, Roberts KA, Nestler JE. Effects of metformin on early pregnancy loss in the polycystic ovary syndrome. *J Clin Endocrinol Metab*

- 2002;87(2):524-9.
46. Andrade C. Major malformation risk, pregnancy outcomes, and neurodevelopmental outcomes associated with metformin use during pregnancy. *J Clin Psychiatry* 2016;77(4):e411-414.
 47. Kim DJ, Lee SK, Kim JY, et al. Intravenous immunoglobulin G modulates peripheral blood Th17 and Foxp3(+) regulatory T cells in pregnant women with recurrent pregnancy loss. *Am J Reprod Immunol* 2014;71(5):441-50.
 48. Ata B, Tan SL, Shehata F, Holzer H, Buckett W. A systematic review of intravenous immunoglobulin for treatment of unexplained recurrent miscarriage. *Fertil Steril* 2011;95(3):1080-1085 e1081-1082.
 49. Yamada H, Morikawa M, Furuta I, et al. Intravenous immunoglobulin treatment in women with recurrent abortions: increased cytokine levels and reduced Th1/Th2 lymphocyte ratio in peripheral blood. *Am J Reprod Immunol* 2003;49(2):84-9.
 50. Ahmadi M, Abdolmohammadi-Vahid S, Ghaebi M, et al. Effect of Intravenous immunoglobulin on Th1 and Th2 lymphocytes and improvement of pregnancy outcome in recurrent pregnancy loss (RPL). *Biomed Pharmacother* 2017;92:1095-102.
 51. Lee SK, Kim JY, Han AR, et al. Intravenous Immunoglobulin G Improves Pregnancy Outcome in Women with Recurrent Pregnancy Losses with Cellular Immune Abnormalities. *Am J Reprod Immunol* 2016;75(1):59-68.
 52. Sung N, Han AR, Park CW, et al. Intravenous immunoglobulin G in women with reproductive failure: The Korean Society for Reproductive Immunology practice guidelines. *Clin Exp Reprod Med* 2017;44(1):1-7.
 53. Triggianese P, Lattavo G, Chimenti MS, et al. Reproductive outcomes 20 years after the intravenous immunoglobulin treatment in women with recurrent pregnancy losses. *Am J Reprod Immunol* 2020;83(4):e13224.
 54. Gomaa MF, Elkholy AG, El-Said MM, Abdel-Salam NE. Combined oral prednisolone and heparin versus heparin: the effect on peripheral NK cells and clinical outcome in patients with unexplained recurrent miscarriage. A double-blind placebo randomized controlled trial. *Arch Gynecol Obstet* 2014;290(4):757-62.
 55. Tang AW, Alfirevic Z, Turner MA, Drury JA, Small R, Quenby S. A feasibility trial of screening women with idiopathic recurrent miscarriage for high uterine natural killer cell density and randomizing to prednisolone or placebo when pregnant. *Hum Reprod* 2013;28(7):1743-52.
 56. Michael AE, Papageorghiou AT. Potential significance of physiological and pharmacological glucocorticoids in early pregnancy. *Hum Reprod Update* 2008;14(5):497-517.
 57. Palmsten K, Bandoli G, Vazquez-Benitez G, et al. Oral corticosteroid use during pregnancy and risk of preterm birth. *Rheumatology (Oxford)* 2020;59(6):1262-71.
 58. Nakagawa K, Kwak-Kim J, Ota K, et al. Immunosuppression with tacrolimus improved reproductive outcome of women with repeated implantation failure and elevated peripheral blood TH1/TH2 cell ratios. *Am J Reprod Immunol* 2015;73(4):353-61.
 59. Winger EE, Reed JL. Treatment with tumor necrosis factor inhibitors and intravenous immunoglobulin improves live birth rates in women with recurrent spontaneous abortion. *Am J Reprod Immunol* 2008;60(1):8-16.