

Summary of heart review

1. Sources of error in biopsies.
2. The true disease stage is a latent variable.
3. Summary of the MMDX approach.
4. Molecular biology of rejection.
5. Developing the heart MMDx-heart report
 - a. 3 archetype model
 - b. 4 archetype model
 - c. current report
 - d. what lies beneath: subtle ABMR
 - e. ABMR is a relatively benign short term; TCMR is very damaging
 - f. function correlates with injury recent and atrophy fibrosis
6. injury archetype groups indicate a severe injury and late injury group
 - a. survival post biopsy correlates with injury even when rejection is eliminated
 - b. TCMR causes severe and late injury; ABMR slowly produces late injury; relatively little early effect on parenchyma

Key References

1. Halloran PF, Madill-Thomsen KS. The Molecular Microscope Diagnostic System: Assessment of Rejection and Injury in Heart Transplant Biopsies. *Transplantation* 2023;107(1):27-44.
2. Madill-Thomsen KS, Reeve J, Aliabadi AZ, Cadeiras M, Crespo-Leiro M, Depasquale EC, et al. Assessing the relationship between molecular rejection and parenchymal injury in heart transplant biopsies. *Transplantation* 2022;106(11):2205-2216.
3. Halloran PF, Madill-Thomsen KS, Aliabadi-Zuckermann A, Cadeiras M, Crespo-Leiro M, DePasquale E, et al. Many heart transplant biopsies currently diagnosed as no rejection have mild molecular antibody-mediated rejection-related changes. *Journal of Heart and Lung Transplantation*. 2021;41(3):334-344.
4. Parkes MD, Aliabadi AZ, Cadeiras M, Crespo-Leiro MG, Deng M, Depasquale EC, et al. An integrated molecular diagnostic report for heart transplant biopsies using an ensemble of diagnostic algorithms. *J Heart Lung Transplant*. 2019;38(6):636-46.
5. Halloran PF, Reeve J, Aliabadi AZ, Cadeiras M, Crespo-Leiro MG, Deng M, et al. Exploring the cardiac response to injury in heart transplant biopsies. *JCI Insight*. 2018;3(20):e123674.
6. Loupy A, Duong Van Huyen JP, Hidalgo LG, Reeve J, Racape M, Venner J, et al. Gene Expression Profiling for the Identification and Classification of Antibody-Mediated Heart Rejection. *Circulation*. 2017;135(10):917-35.