

New Technologies - AI and Single Cell Sequencing

Application of machine learning in liver transplantation

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Artificial Intelligence (AI) tools have been increasingly applied to clinical questions in transplant medicine in recent years. As we continue to push the limits of transplantation, with the older age and complex comorbidities of recipients, there are many challenges throughout transplant medicine that must be better addressed. Various factors affect Liver transplant pathology & outcomes, including sex, ethnicity, genetics, BMI, diabetes, and immunosuppressive regimens. There exist complex, non-linear patterns in laboratory tests that must be considered in conjunction with the complex clinical variables to predict outcome. Additionally, electronic health record data, imaging technologies, histology, and molecular data have continued to expand the types of data available. These complex data points, their hidden patterns and interrelationships can be uniquely leveraged with the use of AI tools. Longitudinal changes in these variables are also being examined to provide a continuous reassessment of risk along the timeline. Applications of AI in transplant medicine include waitlist prioritization, donor-recipient matching, and short-term/long-term outcome prediction.

In this talk, I will go over these considerations as well as our experience with clinical deployment of ML tools, which represents an exciting step forward in the application of AI in liver transplant medicine.