TRANSPLANT-SPECIFIC BLOOD TESTS

STARZL NETWORK for Excellence in Pediatric Transplantation

BLOOD TESTS YOUR TRANSPLANT TEAM MAY ORDER

Epstein Barr Virus (EBV): is a common human virus that is a member of the herpes virus family in which most people become infected with at some point in their lives. It is spread through bodily fluids with the most common spread by person to person contact but can also be spread by blood transfusions and organ transplants.

Monitoring and treatment of EBV virus can vary at different transplant institutions but follow the same basic principles:

1. EBV immunoglobulins: EBV IgG and IgM are obtained prior to transplant. EBV IgM will determine a current infection of EBV and EBV IgG will determine a past infection of EBV and have developed immunity.
    a. EBV recipient who is IgG negative and received an IgG negative donor has the lowest risk of infection
    b. EBV recipient who is IgG negative and received an IgG positive donor has the highest risk of infection
2. EBV PCR: is a sensitive quantitative test that looks for genetic material of the EBV that is used as a screening measurement after transplant.
    a. Monitoring can guide clinicians for preemptive reduction of immunosuppression to prevent EBV infection and possibility of post-transplant lymphoproliferative disorder (PTLD).
    b. Evaluating the results:
        i. Most testing is developed by its own laboratory (in-house assay) which makes comparison between different laboratory results difficult to interpret.
        ii. Also testing can be performed on whole blood measurements (a more sensitive test) vs plasma measurements (a more specific test).
        iii. Following specific cut off value for the result does not provide enough information and following trends of the values is more informative.

Cytomeglalovirus (CMV): is a common human virus of the herpes family that is spread by person to person but can also be spread by blood transfusions and organ transplant.

CMV is a common viral infection after transplant and usually occurs 1-3 months after transplant.

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Monitoring and treatment of CMV virus can vary at different transplant institutions but follow the same basic principles:

1. CMV immunoglobulins: CMV IgG and IgM are obtained prior to transplant. CMV IgM will determine a current infection of CMV infection and CMV IgG will determine a past infection of CMV and have developed immunity.
    a. CMV IgG negative recipients who receive a CMV IgG positive donor are at the highest risk of development of CMV disease after transplant.
    b. CMV IgG negative recipients who receive CMV IgG negative donor are the lowest risk of development of CMV disease after transplant.
2. CMV PCR: a sensitive quantitative test that looks for genetic material of the CMV that is used as a screening measurement after transplant and can guide the clinician to reduce immunosuppression to decrease the chance of infection of organs (invasive disease).

Quantitative Immunoglobulins: This level measures the number of certain antibodies in your blood that help to fight off viruses and bacteria. They are IgG, IgA, IgM, and IgE.

Human Leukocyte Antigen (HLA): group of cell-surface proteins which are unique for individuals (only identical twins tend to share the same HLA markers) and are responsible for the regulation of the immune system. There are 2 classes of HLA antigens: Class I is divided into antibodies which include HLA-A, HLA-B, HLA-C while Class II is divided into HLA-DR, HLA-DP, HLA-DQ. Measurement of antibody levels to the HLA antigens which are different between the recipients and the donor can help monitor the risk of organ rejection and aid in immunosuppressive medication decisions.

Pleximmune: screening blood test that measures a form of T lymphocytes to determine the transplant recipient's risk of development of rejection on their current immunosuppression and may improve the long-term management of immunosuppression with serial use.