Transplant Rejection

There are various mechanisms through which organs are rejected. In hyperacute rejection, which occurs within minutes, an antibody-mediated rejection occurs due to the presence of preformed antidonor antibodies in the transplant recipient. Acute rejection, which occurs weeks later, leads to a cell-mediated rejection process due to cytotoxic T lymphocytes reacting against foreign MHCs or an antibody-mediated process. In chronic rejection, which occurs months to years after transplant, organ atrophy is caused by T cell and antibody-mediated vascular damage.



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Hyperacute
Hiker
Hyperacute rejection occurs within minutes.

Occurs within Minutes
Minute-stopwatch
Hyperacute transplant rejections occur within minutes.

Antibody Mediated Due to Preformed Antidonor Antibodies
Ant-tie-bodies in Preformed-line
In this type of rejection, an antibody-mediated rejection occurs due to the presence of preformed antidonor antibodies in the transplant recipient.

Acute
Acute-angle
Acute rejection, which occurs weeks later, leads to a cell-mediated rejection process due to cytotoxic T lymphocytes reacting against foreign MHCs. Interestingly, it can also lead to an antibody-mediated immune (humoral) response.

Occurs within Weeks
Weekly-newspaper
Acute rejections occur within weeks of transplantation.

Cytotoxic T Lymphocytes Cause Cell-mediated or Antibody-mediated Response
Side-toe-toxic Tennis-ball or Ant-tie bodies
Acute rejection may occur due to a cell-mediated rejection process, where cytotoxic T lymphocytes react against foreign MHCs. Acute rejection may also occur due to an antibody-mediated (humoral) response.

Chronic
Crone
In chronic rejection, which occurs months to years after transplant, organ atrophy is caused by T cell and antibody-mediated vascular damage.

Occurs Months to Years Later
Monthly-moon and Yearly-sun
Chronic rejection is observed months to years after transplant.

Antibody and T Cell-mediated Vascular Damage
Ant-tie-bodies and Tennis-balls causing Vascular Damage
In this type of transplant rejection, T cell and antibody-mediated vascular damage leads to organ ischemia, causing atrophy.

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