

IMMUNOSUPPRESSION

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Modern immunosuppression is so effective that acute rejection rates of 10–20% can be achieved in all types of solid organ transplantation. The challenge is to deliver sufficient immunosuppression to prevent rejection while minimising drug side effects. Immunosuppression also increases the risk of both infection and malignancy. This is a non-specific effect related to the total burden of immunosuppression rather than agent-specific side effects. The mechanisms of action of current immunosuppressive drugs depend on anti-inflammatory effects and the prevention of lymphocyte activation and proliferation (Figure 88.10). Lymphocytes are some of the most rapidly dividing cells in the body and their activation and clonal expansion forms the biological basis of acute allograft rejection. Immunosuppression for transplantation has two phases: induction and maintenance. Induction therapy commonly consists of a combination of high-dose intravenous steroids and the anti-CD25 monoclonal antibody basiliximab, which locks IL-2 receptors. Other induction agents for high-risk cases are ATG and the monoclonal antibody alemtuzumab (Campath). The commonest maintenance immunosuppressive regimen for solid organ transplants consists of triple therapy with a calcineurin inhibitor (cyclosporin or tacrolimus), an antiproliferative agent (azathioprine or mycophenolic acid) and steroids.

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