MHC and other antigens present on the cells of the transplanted organ. Such drugs include tacrolimus, mycophenolate mofetil and azathioprine. However, if this suppression is overcome and the patient experiences an episode of transplant rejection the strategy shifts to one targeted at suppressing the effector arm of the response. In these clinical circumstances high-dose corticosteroids are used and if these are not wholly effective humanized monoclonal antibody may be used to deplete immunocompetent cells.

Comparable but undesirable immunosuppression may occur in patients receiving chemotherapy for malignancy or anti-inflammatory therapy for autoimmune or other chronic inflammatory disease. In these circumstances the immunosuppression is less specific, may affect the afferent or effector arms of the immune response and the outcomes are much less predictable.

Both groups of patients are susceptible to infection. The specific suppression of the afferent T cell response in transplantation renders these patients particularly susceptible to viral disease. Cytomegalovirus infection, by reactivation or *de novo* infection, is a well recognized and difficult problem in patients who have recevied transplants. Such patients are also at risk for two types of viral-induced malignancy. Those who have experienced several rounds of antirejection therapy have an especially high risk of developing EBV-induced B-cell proliferation and lymphoma called post-transplant lymphoproliferative disorder (PTLD). Patients with transplants also commonly develop multiple papilloma-virus-induced squamous cell carcinomas of the skin and genital tract. Chemotherapy patients have a tendency to more bacterial infection although may also experience viral infection. The risk of bacterial infection is particularly associated with bone marrow suppression and a fall in white blood cell count.

SUMMARY

- Understanding normal cellular structure and function is key to understanding disease.
- Stem cells form a small but fundamental subpopulation of the total cell mass.
- Morphogenesis occurs under tight genetic control which may be disrupted.
- The balance between cell proliferation (regulated through the cell cycle) and cell death (through apoptosis) is crucial for normal development and survival and is perturbed in many diseases.
- The main non-neoplastic disorders of growth are hypertrophy, hyperplasia, atrophy and metaplasia.
- Ageing is a complex process, aspects of which are still incompletely understood.
- The immune system has innate and adaptive components, the latter having humoral and cell mediated components.
- There are four classes of hypersensitivity reactions.
- Autoimmune disease occurs when immunological tolerance breaks down and is either tissue specific or systemic.
- Immunodeficiency may be primary (inherited) or secondary to disease (e.g. HIV infection) or its treatment (e.g. immunosuppression for organ transplantation).

FURTHER READING

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