



Thymectomy

Jutte van der Werff ten Bosch



Universitair Ziekenhuis Brussel



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Normal physiology of the thymus

- The thymus is an important organ in the immune system located in the upper anterior thorax
- Plays a vital role in maturation of T lymphocytes, allowing the immune system to learn to distinguish between self and non self
- Spontaneous involution in adults

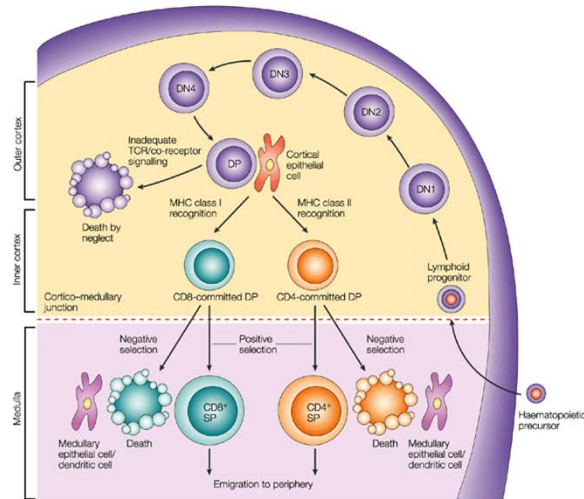


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Normal physiology



Normal physiology

- After thymic maturation naive T cells enter the peripheral compartment
- After recognition specific antigen a T cell response develops
 - Cytotoxic T cells
 - B cell help
- Afterwards, Memory T cells remain
- Involution of the thymus at older age
 - Importance vast T memory repertoire

Causes of thymus dysfunction

- Congenital (Di George syndrome)
- After cardiosurgery
- Irradiation
- Thymectomy for autoimmunity (myasthenia gravis)

Total thymectomy leads to

- Impossibility of T cells to mature
 - Lack of T cells
 - Lack of T cell driven B cell response
 - Lack of regulatory T cells
- Even small amounts of Thymus tissue can lead to some T cell output

Vaccination strategies after thymectomy

- Differences from patient to patient
 - Age of thymectomy
 - Proportion of residual thymus tissue
 - Number of infections eg. CMV
- Difficult to create general guidelines
- In general: better safe than sorry

Guidelines

- Standard vaccinations recommended
 - DTP, IPV, H. Influenza, Hepatitis, Influenza, pneumococcal and meningococcal disease and HPV
 - Travel clinic: Japanese encefalitis, European Tick borne encephalitis, S. Typhi, Rabies and tetravalent meningococcal vaccination can be considered.

Guidelines

- To be avoided
 - Rotavirus, MMR, VZV
 - Yellow fever, oral S. Typhi and BCG

General remarks

- As this patient group is heterogeneous, it should be considered to evaluate thymic output before deciding on vaccination
 - CD3, CD4, CD8, CD45RA/RO, CD62L and CD27, and Dr expression
 - T cell stimulation tests
- If possible, vaccination responses should be measured

Conclusion

- Patients present with variable thymic output and T cell repertoire after thymectomy, depending on several factors
- Vaccination with live attenuated virus should only be carried out after careful consideration
- Evaluation of the T cell compartment by flow cytometry can be helpful
- Evaluation of antibody titers after vaccination should be carried out if possible