

Th1

1. Neuroanatomy: Thoracic Spinal Segment 1 (T1)

Th1 refers to the **first thoracic spinal segment**.

Location

- Situated between cervical segment C8 and thoracic segment T2
- Corresponds approximately to the **first thoracic vertebra (T1)**

Function

- Origin of **spinal nerves T1**, which contribute to:
 - **Brachial plexus** (particularly the inferior trunk)
 - **Sympathetic preganglionic neurons** in the **intermediolateral cell column (IML)**
- Part of the **thoracolumbar outflow** of the **sympathetic nervous system**

Clinical Relevance

- Lesions at Th1 may cause:
 - **Horner syndrome** (ptosis, miosis, anhidrosis) due to disruption of sympathetic fibers
 - Motor or sensory deficits in the medial arm/forearm

2. Immunology: T Helper 1 Cells (Th1)

Th1 cells are a subtype of **CD4+ T helper lymphocytes** that orchestrate the **cell-mediated immune response**.

Function

- Activate **macrophages** and **cytotoxic T cells**
- Promote defense against **intracellular pathogens** (e.g., viruses, some bacteria)

Cytokine Profile

- Secrete **Interferon-gamma (IFN-γ)**, **IL-2**, **TNF-α**
- Stimulated by **IL-12** (from dendritic cells/macrophages)

Clinical Relevance

- Th1 dominance is associated with:

- **Autoimmune diseases** (e.g., type 1 diabetes, multiple sclerosis)
- Resistance to **tuberculosis**
- Imbalance between **Th1/Th2** responses affects immunity and hypersensitivity patterns

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