Clinical and Metabolic Terms

- **ADC (Apparent Diffusion Coefficient):** A measure of the magnitude of diffusion of water molecules within tissue, typically used in MRI to identify the **ischemic core**.
- **AIF (Arterial Input Function):** The concentration of contrast agent in the arterial blood supplying a brain region over time, which is essential for **deconvolution analysis** to quantify perfusion.
- **AIS (Acute Ischemic Stroke):** A condition where blood flow to a part of the brain is suddenly restricted, leading to potential tissue damage.
- **ASPECTS (Alberta Stroke Program Early CT Score):** A 10-point scoring system used to quantify early ischemic changes on **non-contrast CT** scans by assessing the middle cerebral artery territory.
- **CBF (Cerebral Blood Flow):** The volume of blood flowing through a specific mass of brain tissue per unit of time.
- **CBV (Cerebral Blood Volume):** The total volume of blood present in a given mass of brain tissue.
- **$CMRO_2$ (Cerebral Metabolic Rate of Oxygen):** A metabolic marker reflecting the amount of oxygen consumed by brain tissue, calculated as the product of **CBF** and **OEF**.
- **CTH (Capillary Transit-time Heterogeneity):** A measure of the dispersion or variability of blood transit times through the **capillary bed**, reflecting microvascular efficiency.
- **DCE (Dynamic Contrast Enhanced):** A perfusion imaging technique involving the analysis of signal intensity changes over time during continuous contrast injection to assess **tissue kinetics**.
- **DSC (Dynamic Susceptibility Contrast):** An MRI technique that tracks the passage of a contrast bolus to measure **perfusion parameters** based on signal loss.
- **DWI (Diffusion-Weighted Imaging):** An MRI sequence sensitive to the random motion of water, used to detect early signs of **ischemic injury**.
- **Ghost Core:** A phenomenon where the **ischemic core** is initially overestimated on MRI but subsequently reverses after successful **reperfusion**.
- **HIR (Hypoperfusion Intensity Ratio):** A measure of **collateral status** calculated as the volume of tissue with Tmax > 10s divided by the volume with Tmax > 6s.
- **Ischemic Core:** Brain tissue that has sustained irreversible damage due to severe lack of blood flow. In MRI, this is typically identified using Apparent Diffusion Coefficient (ADC) thresholds, and in CT, it is assessed via Cerebral Blood Flow (CBF)
- **Ischemic Penumbra:** The salvageable tissue surrounding an ischemic core that has reduced blood flow but may survive if **reperfusion** is achieved quickly. This assessment usually relies on Tmax or Delay parameters.
- **LVO (Large Vessel Occlusion):** A blockage in a major brain artery, often resulting in severe stroke symptoms.
- **Mismatch Ratio:** Ratio between hypoperfused volume and the ischemic core volume.
- **Mismatch Volume:** Hypoperfused volume minus core volume

- **MTT (Mean Transit Time):** The average time taken for blood to pass through the **vasculature** in a specific brain region.
- **OEF (Oxygen Extraction Fraction):** The percentage of oxygen extracted by the tissue from the arterial blood; elevated levels often indicate **viable tissue** under metabolic stress.
- **Pseudoprogression (PsP):** A treatment-related inflammatory reaction in **glioblastoma** that mimics tumor growth on MRI, typically occurring shortly after chemoradiotherapy.
- **Radionecrosis:** a treatment-related abnormality that occurs following radiation treatment therapy or concurrent chemoradiotherapy for brain tumors such as glioblastoma.
- **Reperfusion:** The restoration of blood flow to an organ or tissue that has had its blood supply cut off.
- **rLeakage (Relative Leakage):** A parameter that measures the relative magnitude of **contrast agent extravasation** from the vascular compartment into the extravascular space.
- **Tmax (Time to Maximum):** The time required for the **residue function** to reach its peak value, widely used to identify **hypoperfused** or penumbral tissue.
- **True Progression:** Specifically in context of post-treatment glioblastoma, refers to the actual recurrence or continued growth of active tumor cells rather than a reaction to treatment.
- **TTD (Time to Drain):** The duration from the peak concentration of contrast until wash-out, used as a sensitive marker for **cerebral vasospasms**.
- **TTP (Time to Peak):** The time from the beginning of the contrast injection (or bolus index) until the maximum signal change is reached.