Cerebrospinal fluid amyloid-beta

Cerebrospinal fluid amyloid-beta (CSF Aβ) refers to the concentration of amyloid-beta peptides, particularly $A\beta_{42}$ and $A\beta_{40}$, measured in cerebrospinal fluid, which are biomarkers used in the diagnosis and monitoring of Alzheimer's disease.

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see Amyloid beta 40

see Amyloid beta 42

Beta-amyloid (Aβ) is a protein fragment that is produced when a larger protein called amyloid precursor protein (APP) is broken down. Aβ is a sticky and insoluble peptide that tends to aggregate and form plaques between nerve cells in the brain, which is a hallmark of Alzheimer's disease (AD).

In healthy individuals, Aβ is cleared from the brain through various mechanisms, including degradation by enzymes and clearance by microglia and other immune cells. However, in AD, the clearance of Aβ is impaired, leading to its accumulation in the brain.

The accumulation of Aβ can trigger a cascade of events that lead to inflammation, oxidative stress, and neuronal damage, ultimately resulting in cognitive impairment and other symptoms of AD. Thus, targeting Aβ aggregation and clearance is a key strategy in the development of AD therapies.

There are currently several therapeutic approaches under investigation to target Aβ, including monoclonal antibodies that bind to and clear Aβ, vaccines that stimulate the immune system to clear Aβ, and small molecule drugs that inhibit Aβ production or promote its clearance. However, there is still much to learn about the complex role of Aβ in AD and the optimal strategies to target it for therapeutic benefit.

see Amyloid-beta pathology