Biochemistry team flash cards

Vitamin A Alzheimer disease

Vitamin A sources are divided into 2 parts:

1. Animal source (preform):

Which are called “Retnoids”:

1-Retinol 2-retinal or retinaldehyde

3-retinoic acid.

1. Planet source (provitamin):

Beta- carotene

Biochemical markers correlated to degree of dementia include:

1-Loss of **choline acetyltransferase**

**2-Synaptophysin** immunoreactivity

3-Amyloid burden

Excessive amount of Vitamin A leads to toxicity, decreasing leads to multiple diseases and severe decrease leads to blindness.

Rhodopsin and Iodopsin are light sensitive pigments

Vitamin A is stored in the liver as Retinyle palmitate.

The Microscopic findings of Alzheimer’s disease are:

1- Neuritic Plaques:

The dominant component of the plaque core is Aβ, a peptide derived from a larger molecule, amyloid precursor protein (APP)

2- Neurofibrillary tangles: which contains TAU protein.

3- Amyloid Angiopathy.

Dark adaptation time

The time required to synthesize rhodopsin in the dark.

Pathogenesis of cerebral infarction

The brain is highly susceptible to ROS- induced damage because of

1-High concentrations of peroxidisable lipids

2-Low levels of protective antioxidants

3-High oxygen consumption

4-High levels of iron (acts as pro-oxidants under pathological conditions)

5-The occurrence of reactions involving dopamine & Glutamate oxidase in the brain

Biochemistry team flash cards FINAL

Vitamin B6 & B12 Cerebrospinal fluid

**Blood & Hemoglobin pigments in CSF:**

**A-Traumatic tap:** 1-Bright red color.

2-RBCS in decreasing number as the fluid is sampled

**B-Subarachnoid hemorrhage (SAH):**

Xanthochromia (hemoglobin breakdown pigments) = RBCs lysis & metabolism previously occurred (at least 2 hours earlier)

In viral meningitis CSF [glucose] is usually normal

↓CSF [glucose]:

A-Disorder in carrier-mediated transport:

e.g. TB meningitis, sarcoidosis

B-Active metabolism of glucose by cells or organisms:

e.g. acute purulent, amebic, & fungal meningitis

C-Increased metabolism by the CNS:

e.g. by CNS neoplasm

Forms of Vitamin B12:

1-Cyanocobalamine 2-Hydroxycobalamine

3-Adenosylcobalamine 4-Methylecobalamine

Cobalamin is essential for:

1-RBC maturation 2- normal nervous system function

Reaction that requires Vitamin B12:

1-Methylmalinyl- CoA mutase which helps in:

Conversion of methylmalonyl-CoA to Succinyle CoA.

2-Methionase Synthase which helps in:

Conversion of homocysteine to methionine.

Homocysteine re-methylation reaction is the only pathway where N₅-methyl TH4 can be returned back to tetrahydrofolate pool

The active form of Vitamin B6 is Pyridoxal phosphate.

Isoniazid treatment of TB causes Vitamin B6 deficiency.