Alzheimer's Brain Changes

Cheah Pike-See, Tan Niu-Jin, Vidyadaran Sharmili, Norshariza Nordin, Mohd Nasir Baharudin, Lim Chai-Ling, Eryse Seth and Ling King-Hwa

Alzheimer's disease (AD) is a neurodegenerative condition that is predominant in the elderly, making it a major cause of disability. Gradual loss of brain cells is a feature of AD, causing memory loss and decline in cognitive functions including judgment, attention, and learning. The progression of AD is attributed to the build-up of abnormal structures such as plaques and tangles, eventually leading to death of brain cells. In the healthy brain, microtubules, the parallel protein structures, help to transport nutrients to the cells. In AD brain, these protein threads fall apart and form tangles, depriving the brain cells from nutrient supply. In AD brain, beta amyloid, the protein fragments also tend to accumulate to form hard and insoluble amyloid plaques. The clumps activate the brain's immune defense cells called microglia, which transform from their quiescent branched form into an amoeboid shape and secrete substances that can be harmful to healthy brain cells.

The brain does not have a great ability to make new neurones. Therefore, the neurones are protected by the blood-brain barrier formed by the endothelial cells and supported by astrocytes. In AD, astrocytes deteriorate and coupled with microglial activation, it leads to the leaky blood-brain barrier. Although AD is incurable, one can reduce the risk of developing AD by practising a healthy lifestyle such as regular physical exercise, balanced diet, strong social connection, and increased intellectual activity. Remember, "use it or lose it" is the principle to protect your brain from deteriorating!


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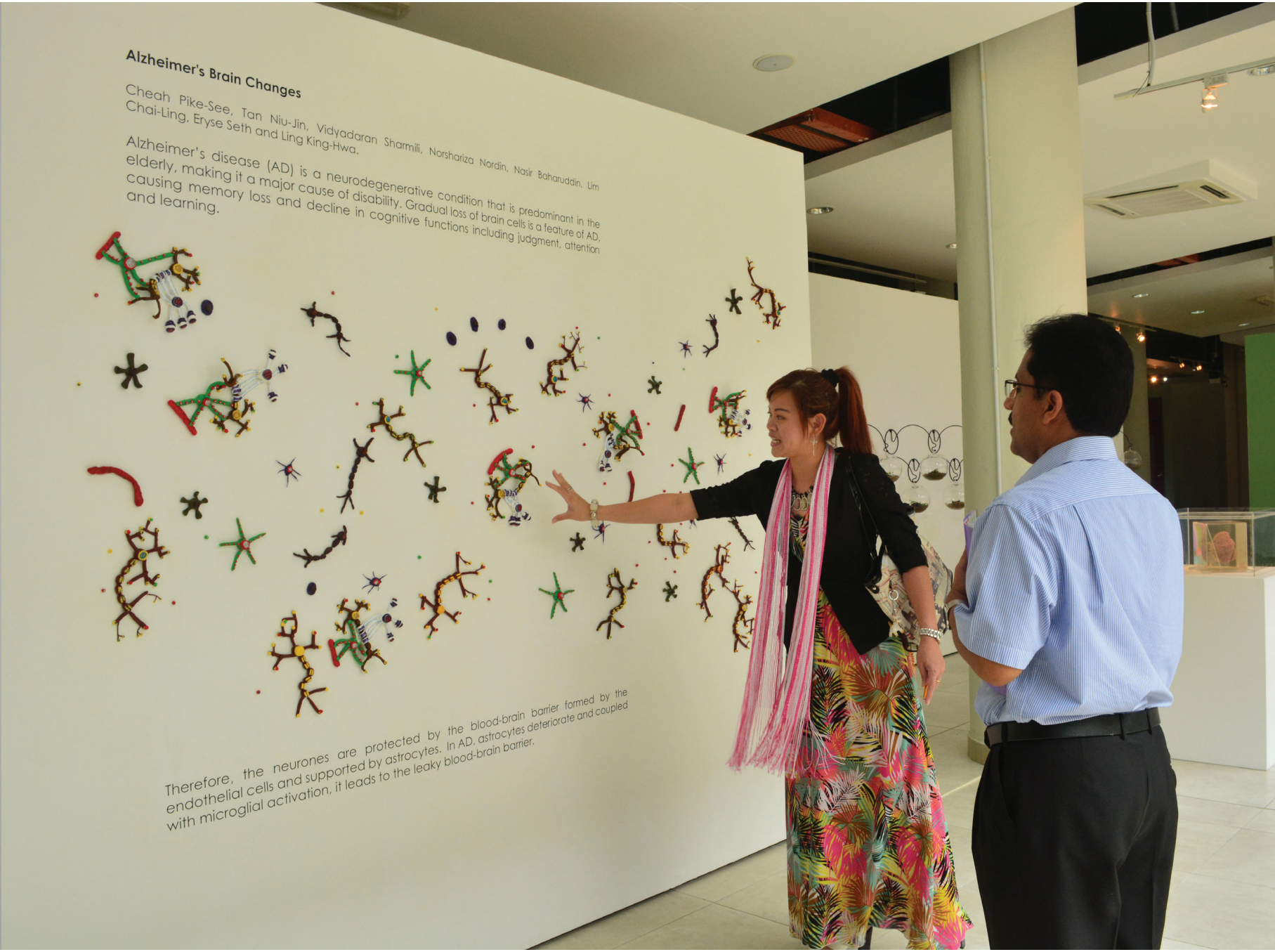
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