Research Report

alzheimer's wa
the dementia experts

March 2019

Cause

1. Scientists at IBM Research believe they have found a way to detect Alzheimer's in people decades before symptoms appear, using artificial intelligence. Previous studies have discussed the process of testing spinal fluid for AD biomarkers, but such testing is invasive, expensive and not a preferred option for early disease detection. Now, scientists are using machine learning to identify the proteins in blood that can predict the concentration of the biomarker in spinal fluid, with an accuracy of up to 77%.
   [*Machine Learning = Machine learning is the scientific study of algorithms and statistical models that computer systems use to effectively perform a specific task without using explicit instructions, relying on patterns and inference instead. It is seen as a subset of artificial intelligence*]
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2. A new study by researchers at Cornell University has identified a biological mechanism that directly contributes to cognitive decline. The process of white blood cells clogging capillaries is linked to poor blood flow to the brain, immediately impairs cognitive function, including attention, even in otherwise healthy humans. The researchers discovered, with the use of mouse models, that by blocking the cellular mechanism that causes clogging, they would get improved blood flow and an almost immediate restoration of cognitive performance.
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3. In a large-scale study, researchers in Spain have analysed over 4,000 MRI scans of healthy and diseased brains, from people aged 9 months to 94 years, to determine how changes observed in the normal ageing process differ from those in Alzheimer's disease. They found that early atrophy of the amygdala and hippocampus began at age 40, well before signs of the disease were apparent.
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Cure

1. Several biopharmaceutical companies in Australia are trialling anti-tau therapies to combat Alzheimer's disease. These therapies are monoclonal antibodies, given via infusion, to halt the progress of toxic tau in the brain. Where other therapies have concentrated on tackling beta-amyloid plaques, these new treatments focus on the toxic tau proteins that cause tangles in the brain.
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   For further information about the trials, contact ABBvie abbvieclinicaltrials@abbvie.com

2. Scientists have found a plant protein (CC1) that shares characteristics with a protein linked to Alzheimer's disease. Dysfunctional tau proteins have long been implicated in the neurodegeneration process, and researchers now see a similarity in the way the two proteins affect cell processes. Microscopic structures, called microtubules, play a key role in guiding the transport of materials in cells, By manipulating seeds, and exchanging their CC1 protein for tau, the researchers are hoping to learn more about the microtubule binding process, how it works and how it affects neuronal functioning.
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3. Researchers in the US have found that certain compounds, found in carrots and green tea, can reverse Alzheimer's-like symptoms in mice genetically engineered to have the disease. Working memory was restored in the mice fed a diet containing a combination of EGCG, or epigallocatechin-3-gallate, a key ingredient in green tea, and FA, or ferulic acid, which is found in carrots, tomatoes, rice, wheat and oats. It is believed the compounds prevent amyloid precursor proteins from breaking up into amyloid beta which clogs the brains of people with AD, and also reduce neuroinflammation and oxidative stress. The study supports the idea that combination therapies may well be the most effective way of treating AD.
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Care

1. The Royal Commission into Aged Care has been warned that psychotropic drugs are being heavily over-prescribed in aged care facilities around Australia. Geriatrician Edward Strivens claims up to 80% of dementia patients are taking unnecessary sedatives and anti-depressants, with increased risk of stroke, disability, pneumonia and even death. It is not uncommon for people to receive a dangerous cocktail of drugs, as medications are often prescribed to counteract the unwanted side effects of other treatments. Strivens said nursing homes should be guided by the mantra: "start low, go slow and review regularly", and emphasised the need for person-centred care and understanding the underlying causes for a person's behavioural changes.
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