



Forget me not - An insight into Alzheimer's disease

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Dementia is a very common term used usually referring to a disease of the brain. However, dementia is a broad word meaning a variety of symptoms including memory loss, lack of motivation which interfere with everyday activities. Therefore, dementia is not just one disease. In fact, there are many disorders which cause a patient to have dementia such as Alzheimer's disease (AD), vascular dementia, frontotemporal dementia, and mixed dementia².

After being bereaved of my great grandmother, Eileen, in 2017 due to AD, I began to research the condition, and to say there were 50 million people worldwide with dementia in 2020, it is definitely not talked about enough. Eileen passed away at the age of 89 after living with AD for approximately 9 years. The first signs of illness showed in the usual way, forgetfulness, and repetition of conversations however the more revealing factor that she was suffering from AD was her monthly medication was lasting for much shorter periods of time. When left unsupervised she would retake her medication forgetting she had already done so. She also began to act out of character becoming aggressive and distant towards family members she was once close with. This caused concern with family members resulting in a scan where she was diagnosed with AD. The days became monotonous for those caring for her, everyday her routine was identical to the last, the repetition of meals, conversations and music became draining. However to my great grandmother everyday was a new beginning, songs which she had been listening to for 10 years were suddenly brand new and brought her joy, a meal she's been eating every day for the past week was an exciting flavour she had never tasted before and stories from when she used to dance as a young girl, which the majority of the already family know and love, are unheard and she must tell them again. And though over the 9 years she battled this disease the endless conversations and tasks felt constant to us, for her these new beginnings brought happiness. Each morning she no longer had AD, she was a young girl again dancing ballet in the old school hall, she was working on the farm where she lived till the day she passed, she was just Eileen.

What is Alzheimer's disease?

It is a progressive neurodegenerative disorder caused by the accumulation of beta amyloid plaques and tau protein tangles in the brain⁴. Progressive and neurodegenerative are very similar, meaning worsens over time and gradually slows down the nervous system. Beta amyloid plaques are brain proteins which fail to function normally, these build up in the gaps between brain cells. Tau protein tangles are twisted fibres of protein which build up inside cells. The build-up of these two substances triggers the release of toxins which causes damage to neurons and neuronal synapses, inducing decreased levels of Acetylcholine. This causes areas of the brain to shrink^{3,5}. The reason we associate memory loss with AD is because the cerebellum and prefrontal cortex shrink first - these are the areas which control procedural learning (everyday tasks such as brushing your teeth) and motor learning (getting out of bed). Evidence of this

shrinkage of the brain can be visualised through a CT or MRI scan. There is also research into using PET scans (positron emission tomography) to identify AD.

The progression of AD occurs at varying rates due to several contributing factors such as gender, ethnicity, family history, depression, autoimmune diseases, physical inactivity, lifestyle (e.g., smoking, alcohol consumption) and head injury⁵. However, in every case presented there are seven stages to Alzheimer's disease as follows:

Stage One - there is no impairment at this stage and AD is undetectable, no memory problems are evident.

Stage Two - very mild decline begins, minor memory problems which cannot be distinguished from age related cognitive decline.

Stage Three - memory problems become noticeable and performance on memory tests affected, this can be seen through the forgetting of names or losing things around the house.

Stage Four - moderate decline of cognitive function where symptoms are apparent, the short-term memory is severely impaired and there are noticeable changes in long term memory.

Stage Five - moderately severe decline meaning patients now need assistance with everyday activities, unable to recall simple details and significant confusion.

Stage Six - severe decline, constant supervision is needed due to unawareness of environment and surroundings, loss of bladder and bowel control and behavioural problems.

Stage Seven - the final stage, resulting in loss of ability to communicate or respond and eventual loss of the ability to swallow. AD is a terminal illness therefore the majority of cases lead to death.

Fortunately, medical professionals can keep AD patients as comfortable as possible during this time¹.



References

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