

Adjourning Alzheimer's

A Brief History Of Alzheimer's (Day 4)

Although it has likely existed for at least 2,500 years, Alzheimer's disease was only identified as an actual disorder in the 20th century; for nearly all of human history, people spoke of a broader concept of **dementia** in reference to someone who had lost the ability to reason, whether due to mental illness (such as depression), syphilis (an infection), or **senile dementia** (dementia associated with old age).

Perhaps the earliest documented evidence of dementia was penned around 600-500 BC by the Greek philosopher, **Pythagoras**. Pythagoras divided the human lifespan into six phases: 0-6 years (infancy), 7-21 (adolescence), 22-49 (young adulthood), 50-62 (middle age), 63-79 (old age), and 80 years and up (advanced age). Unfortunately, Pythagoras described the last two phases as the **senium**, a time when "normal" aging resulted in an abject loss of reasoning, leading to senile dementia.

Thus, by 400-300 BC, the common perspective, embraced even by the infamous Greek philosophers **Plato** and **Aristotle**, was that senile dementia was an **inevitable consequence** of the aging process itself. This somewhat skewed view continued to be embraced for centuries.

However, not everyone embraced the view that senile dementia was a part of normal aging. Around 50 BC, the Roman statesman **Cicero** proclaimed that senile dementia was **not an inevitable feature of aging**, that a person could stave it off if they remained mentally active and eager to learn new things. Sadly, Cicero's progressive views on senile dementia were ignored for the next 2,000 years.



Cicero.

After Cicero, virtually **no progress** was made in the field of dementia. As the centuries rolled by, mental illness, syphilis, and senile dementia continued to be lumped together under the umbrella term of dementia, and senile dementia continued to be perceived as an inevitable feature of aging.

Finally, something changed. In 1907, German neuropathologist **Alois Alzheimer** published a short scientific paper in which he described a series of pathological changes in the brain of Auguste Deter, a 56-year-old lady who had died with **presenile dementia** (dementia occurring in a younger person, before 65 years of age). Alzheimer described three key abnormalities in Ms Deter's brain:

- (1) A massive **loss of neurons** (brain cells).
- (2) The presence of **amyloid beta (A β) plaques** (abnormal protein deposits outside neurons).
- (3) An abundance of **neurofibrillary tangles** (abnormal protein deposits inside neurons).



Dr Alois Alzheimer and Ms Auguste Deter

The important thing about Alzheimer's short article was that he identified the presence of not just one, but **three** pathological changes in Ms Deter's brain. As a result of Alzheimer's paper, presenile dementia was soon renamed **Alzheimer's disease**, so as to distinguish it from senile dementia.

However, Alzheimer was not the only person to identify pathological brain changes in a person with dementia. In that same year of 1907, the Czech neuropathologist **Oskar Fischer** also published a paper in which he examined the brains of 16 people with senile dementia (not presenile dementia, as Alzheimer investigated). Fischer provided a comprehensive description of A β plaques, which he noted in 12 of the 16 cases. Unfortunately, Fischer's name never became as well-known as Alzheimer's.



Dr Oskar Fischer

Thus, until the late 1900s, despite the finding that A β plaques were seen in both conditions, presenile dementia (now recognized as a disorder, and renamed Alzheimer's disease) and senile dementia (still seen as part of normal aging) remained classified as **two different things**. Alzheimer's disease was thought of as a rare disorder that only occurred in people under 65 years of age. In contrast, senile dementia was thought of as a mere inevitability of the normal aging process, one that would occur in everyone given sufficient time.

Amazingly, it was not until 1976 that a United States neurologist, **Robert Katzman**, argued that since both young people with Alzheimer's disease and older people with senile dementia showed plaques and tangles, they should not be classified as separate things based simply on age; he argued that they were the **same disorder**. Katzman was also troubled that young people with Alzheimer's disease received at least some degree of medical care, whereas the millions of sufferers with senile dementia, which was still seen as an inevitable feature of aging, received virtually none.

Finally, the two dementias were lumped together into one category; rather than rename an already-named disorder, the definition of Alzheimer's disease was **extended** to include not just young people with presenile dementia, but all older people with senile dementia (we no longer use either of these terms by the way). Virtually overnight, a relatively rare disorder suddenly became a very common one; rather quickly, everyone heard about the newly-defined disorder, which now included people of all ages, the one we know today as **Alzheimer's disease**, a disorder that affects perhaps 40 million people worldwide and is doubling in prevalence every 20 years.

So, incredibly, it was not until **1907** that younger people with dementia were finally classified as having a pathological condition, Alzheimer's disease. Even more incredibly, it was not until **1976** that older people with dementia were also classified as having the very same pathological condition, Alzheimer's disease. Somehow, **this eminent disorder has remained unrecognized for most of human history**, a fact that has greatly impeded our ability to learn about it - and adjourn it.

Matt (Neurologist, Waikato Hospital).

References

- (1) Cipriani et al. 2011. Alzheimer and his disease: a brief history. *Neurol Sci* 32, 275-279.
- (2) Goedert. 2009. Oskar Fischer and the study of dementia. *Brain* 132, 1102-1111.