Alzheimer, Alois

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Alois Alzheimer (1864–1915) was a German neuropathologist and neuropsychiatrist whose name is justifiably associated with one of the most important diseases in medicine today. In describing the disease that later came to bear his name, Alzheimer inaugurated a century of progress in the diagnosis and characterization of the dementias, although effective treatment has remained discouragingly elusive. He also made other important contributions to neurology by helping to establish the neuropathological basis of a variety of mental disorders (Figure 1).

Alzheimer was born in Markbreit, Bavaria, and attended medical schools at the Universities of Wurzburg, Tübingen, and Berlin from 1882 to 1887. After his internship, he took a post at the Stadtische Irrenanstalt in Frankfurt-am-Main, where, in 1888, he met the neuropathologist Franz Nissl (1860–1919). The professional contact with Nissl would last a lifetime. In 1902, Alzheimer was invited by the prominent psychiatrist Emil Kraepelin (1856–1926) to join him at Heidelberg. In the year that followed, Alzheimer moved to Munich, where he worked at the Anatomisches Laboratorium der Psychiatrischen und Nervenklinik until 1912. The last 3 years of his life were spent as Chair of Psychiatry at the University of Breslau.

The association with Kraepelin was critical because he was one of the few psychiatrists of his day to consider the neuroanatomical basis of mental disorders. With Kraepelin's encouragement, Alzheimer productively investigated the neuropathology of many diseases characterized by psychiatric dysfunction, including the form of neurosyphilis known as general paresis, vascular dementia, Parkinson's disease, and Huntington's disease. As a clinician who was a keen observer of neurological and psychiatric phenomena, he was able to correlate abnormalities in brain structure and function with the behavioral changes seen during the patient's life. Alzheimer was an illustrator as well as a scientist, and in collaboration with Nissl, he produced an exceptional six-volume neuropathology textbook in 1904.

Figure 1 Alois Alzheimer.

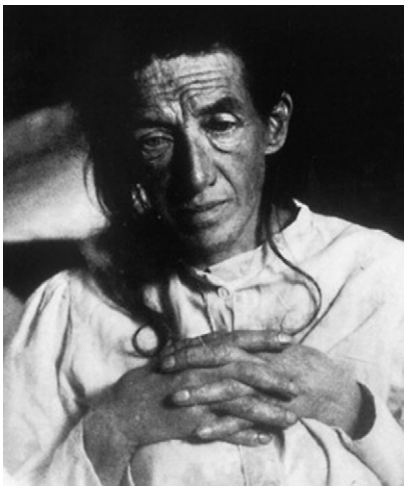

Figure 2 Auguste Deter, the first reported case of Alzheimer's disease.

The work for which Alzheimer is best known, however, is a short case study that appeared in 1907. In that report, Alzheimer described a 55-year-old woman named Auguste Deter (1850–1906) with a 4-year course of progressive personality change, memory loss, and aphasia, and who, at autopsy, had characteristic microscopic features in the brain. Diffuse atrophy was present, but the histopathological changes in the brain, made possible with the use of a silver staining method newly developed by Hans Bielschowsky (1817–1904), were more remarkable. Alzheimer's examination led to the seminal observations of senile (neuritic) plaques and neurofibrillary tangles that were abundant throughout the cerebral cortex. Alzheimer recognized an association between the dementia in that relatively young woman and the striking cortical changes in her autopsied brain, and at a meeting in Tübingen in 1906 he presented the case as 'presenile dementia' (Figure 2).

Kraepelin credited him with the discovery and suggested the eponymic designation. Whether known as presenile dementia or Alzheimer's disease, the illness was long differentiated from degenerative dementia of later onset, which was often referred to as senile dementia. Later studies determined that the neuropathological changes in the two disorders were identical, and the distinction between presenile and senile forms has since been abandoned. Today the sole term Alzheimer's disease refers to individuals of any age who develop the disease, and it is well-known that aging is the most important predisposing risk factor.

The specific location of neuropathology in the cerebral cortex is a notable feature of Alzheimer's work. He correctly pointed out that the cortex was the primary site of disease involvement, revealing both massive neuronal loss leading to

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widespread atrophy and abundant microscopic alterations. Alzheimer's disease thus became the prototypical cortical dementia, a term that is a useful descriptor for degenerative dementias affecting the surface of the brain such as Alzheimer's disease and the frontotemporal dementias. This insight contributed to an emerging recognition that the cerebral cortex is critical for higher mental function.

Alzheimer devoted his considerable talents primarily to neuropathology, the most advanced neuroscientific method of his era. Considered the founder of the Munich school of neuropathology, he was one of the most important figures in the development of that field around the turn of the twentieth century. Along with his colleague Nissl, Alzheimer helped establish the neuropathological basis of many disorders for the first time. In particular, Alzheimer favored a biological approach to psychiatry and was a pioneer in describing neuropathological aspects of mental disorders. This perspective distinguished him from many of his contemporaries, and showed Alzheimer to be remarkably modern in his thinking.

Alzheimer will doubtless be most remembered for his initial description of the disease named after him, but on a broader level he demonstrated the value of interpreting clinical disorders of behavior in light of abnormalities in the brain. His ability to link basic science data with observations of clinical neurology and psychiatry served to stimulate much further work.

See also: Alzheimer's Disease. Alzheimer's Disease; Epidemiology. Dementia. Nissl, Franz. Pick, Arnold

Further Reading

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Relevant Website

www.alz.org
Alzheimer's Association.