Alois Alzheimer's First Report on Cortical Neurodegeneration

In 1906, Alois Alzheimer reported an unusual case of psychiatric illness and specific histomorphological changes in the brain of a 51-year-old female patient. This is the first and original report about a brain neurodegenerative disease, which was to be later classified as Alzheimer's disease. The following text is an almost word-by-word translation of this first report, which was published as a summary of Alzheimer's lecture held during a meeting of psychiatrists from south-west Germany (Tübingen, November 3-4, 1906). Further literature and historical notes have been published by Manuel Graeber (Brain Pathol., 9:237-240, 1999), and another translation of Alzheimer's first and original report is given by K. L. Bick (ed.) in The Early Story of Alzheimer's Disease (Raven Press, 1987).

Translation from the original publication of Alois Alzheimer: Über eine eigenartige Erkrankung der Hirnrinde, Allgemeine Zeitschrift für Psychiatrie und psychisch-gerichtliche Medizin, 64. Band, Verlag von Georg Reimer

Alzheimer (Munich): About an intriguing disease of the cerebral cortex

A. reports a case of illness that was observed at the asylum in Frankfurt/Main and that was submitted for examination of the central nervous system by director Sioli. Clinically the case presented such an aberrant picture that it was impossible to classify it according to known diseases. It showed anatomically a picture that differed from all other findings known so far. A 51-year-old woman demonstrated, as a first conspicuous symptom, ideas of jealousy against her husband. An increasing weakness of memory became noticeable, she was unable to negotiate her way, carried objects in and out, hid them, and sometimes she believed that someone would kill her and began to cry.

In the asylum everything is chaotic. She is temporally and locally completely disoriented. From time to time she says that she does not understand the whole matter, does not find her way. She greets the doctor as if he is a visitor and apologizes for not having finished her work, she shouts that he will stab her, or she turns him away, using phrases, which indicate that she thinks he might say something against her female honour. From time to time she is completely lunatic, carries her bedclothes around, cries for her husband and her daughter and seems to suffer from acousma. She cries frequently with an abominable voice.

The inability to understand a situation causes her to cry loudly, as soon as you examine her.
constant efforts reveal some findings. Her memory is extremely disordered. If you show her some
objects, she names them correctly, but shortly after she has forgotten everything. When reading
she misses out some lines, reads by spelling the letters or accentuates senselessly; when writing,
she reiterates several syllables, ignores others. When speaking, she uses a lot of phrases resulting
from her confusion, some paraphrased expressions (milk pourer instead of cup); sometimes she
breaks off. She does not understand some of the questions, seems to have forgotten the use of
several matters. Her gait is normal, she uses her hands equally. The patellar reflexes exist. The
pupil reacts. Rigid radial arteries, no enlargement of the cardiac dullness, no protein.

The symptoms, which have to be interpreted as focuses, appear sometimes stronger, sometimes
weaker. They are always only slight, whereas the general stupefaction progresses. After a history
of four, five years, she died. In the end the patient was completely lethargic. She lay in the bed
with her legs tucked up and, in spite of all care, she became decubitus.

The autopsy reveals an atrophic brain without macroscopical focuses. The major brain vessels are
arteriosclerotically modified. With the help of preparations, which are made by Bielschowsky's silver
stain, very strange changes of neurofibrils appear. In the inside of a cell, which seems otherwise
to be normal, one or more fibrils stand out due to their special thickness and their feature to
impregnate. Further on, many parallel-running fibrils appear modified in the same way. Then they
affiliate to close bundles [tangels] and appear gradually on the surface. Finally the nucleus and
the cell itself break down, and only an unfurled bundle of fibrils marks the position where a
ganglion cell has lain before.

As these fibrils can be stained with dyes other than normal neurofibrils, a chemical change of the
fibril's substance must have taken place. This might be the cause why the fibrils outlast the
breakup of the cell. The change of the fibrils seems to accompany the inclusion of a pathological
metabolite (yet to be more closely examined) in the ganglion cell. Approximately 1/3 to 1/4 of all
ganglion cells show such a change. Numerous ganglion cells, especially in the upper cell layer,
have completely disappeared.

Over the whole cortex, particularly substantial in the upper layers, you can find miliary focuses
[senile plaques], which result from the deposition of a peculiar substance into the cerebral cortex.
This can already be recognized without staining; however, it is very refractory towards
impregnation. The glia has generated abundant fibers; moreover many glial cells show large fat
deposits. An infiltration of the vessels is completely absent. In contrast, endothelial cells show a
proliferation, and also a sporadic regeneration of the vessels.

In summary, we have to face an intriguing pathologic condition. Such peculiar cases have been
ascertained in a great number in recent years. This observation suggests to us not to push
clinically unknown cases into well-established categories of diseases. There are undoubtedly many
more mental disorders than our textbooks describe. In some of these cases, the histological
examination will clarify the peculiarity of the case. Then will we be able to distinguish specific
diseases from the known classifications and to define those more exactly.

No further discussion.

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