

Gerstmann's Syndrome

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Received 2 August 2004; received in revised form 5 November 2004; accepted 8 November 2004

Abstract

In a series of papers published between 1924 and 1930 Josef Gerstmann described a syndrome comprising finger agnosia, right-left confusion, agraphia and acalculia which was due, he thought, to a left parieto-occipital lesion.

In the ensuing years Gerstmann's description was accepted by a number of clinicians, some of whom reported, in addition, a developmental form of the syndrome. Others, on the contrary, disputed the clinical relevance and the localizing value of the syndrome.

The debate has brought to light a number of subtle difference which had passed unnoticed prior to Gerstmann's publications.

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Keywords: Gerstmann's syndrome; Parietal symptomatology; Finger agnosia; Right-left confusion; Agraphia; Acalculia

In 1924, the *Gesellschaft deutscher Nervenärzte* (Association of German Neuro-Psychiatrists) held its annual meeting in Innsbruck, Austria. On this occasion, the *Wiener klinische Wochenschrift* (Viennese Clinical Weekly) published a special issue, which contained a.o. a paper by Josef Gerstmann entitled *Fingeragnosie. Eine umschriebene Störung der Orientierung am eigenen Körper* (Finger agnosia. A selective disturbance of localization on one's own body).

The author was at the time an assistant physician in the Neuro-Psychiatric Clinic of the University of Vienna. The clinic was headed by Julius Wagner (von) Jauregg (1857–1940), who introduced malaria fever for the treatment of so-called general paresis, i.e. neuro-syphilis, and who in 1927 was awarded the Nobel Prize for Physiology and Medicine on account of this advance in the therapy of the venereal disease.

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Josef Gerstmann was born in 1887, in Lemberg, the capital town of Galicia then a province of the Austro-Hungarian empire. He studied medicine in Vienna, where he graduated in 1912. He received his *Habilitation* in 1921. In 1930, he succeeded Redlich as the head of the *Nervenheilstalt Maria-Theresia-Schlössel* (Neuro-Psychiatric Clinic M.T.S.) in Vienna. He was appointed professor of neurology and psychiatry at the University of Vienna. In 1938, following the annexation of Austria by Nazi Germany, he emigrated to the United States, where he became attached to the Neurological Institute in New York. He died in 1969.

Gerstmann was great friends with Paul Schilder (1886–1940), an Austrian neurologist who was also educated in Vienna. In 1930, Schilder went to New York, where he became director of the psychiatric division of Bellevue Hospital and associate professor of psychiatry at New York University Medical School. He was married to neurologist Lauretta Bender, who is best known for her Visual Motor Gestalt Test.

In his 1924 paper, Gerstmann reported the case of a 52-year-old woman with cerebral arteriosclerosis. Following what seemed to be a cerebro-vascular accident in the left hemisphere, she exhibited pronounced agraphia and acalculia, while reading of sentences and of short texts was possible and her spoken language was deemed to be normal receptively as well as expressively. Yet, the patient made conspicuous mistakes when requested to name her fingers or to wiggle the finger(s) named by the examiner. She made the same type of errors when naming, or pointing on command to, the examiner's fingers. Her misnamings occurred exclusively within the semantic field of the finger names. She erred but rarely when she had to name body parts, or to point to named body parts, other than the fingers.

In addition, the patient found it difficult to follow verbal instructions containing the words right and left and referring to the body (her own or the examiner's). As a rule, she did not make mistakes when asked to point with a specified hand to a named ipsilateral body part. But when she was to point to a named body part with the contralateral hand she constantly uncrossed, i.e. she would point to the body part ipsilateral to the hand used or else would use the hand ipsilateral to the specified body part. Moreover, when requested to reproduce the examiner's movements relative to his own body, she would imitate mirror-wise.

Gerstmann hypothesized that the observed association of agraphia, acalculia, finger agnosia and right-left disorientation resulted from a lesion in the region of the left gyrus angularis.

In December 1926, at a meeting in Vienna of the *Verein für Psychiatrie und Neurologie* (Society of Psychiatry and Neurology), Gerstmann read a paper an expanded version of which was published in *Zeitschrift für die gesamte Neurologie und Psychiatrie* for 1927. The article was entitled *Fingeragnosie und isolierte Agraphie -ein neues Syndrom*.

In this publication, Gerstmann summarized his former case of 1924 and described two new cases which showed the association of agraphia, acalculia, finger agnosia and right-left confusion.

In the summary of his 1924 case, he stated that copying was significantly less disturbed than spontaneous writing and writing to dictation. In his original paper, however, he had observed that copying was impaired to the same degree as spontaneous writing and writing to dictation.

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