

Gerstmann's syndrome in non- dominant hemisphere: a case report

Masoud Ghiasian¹, Sajjad Daneshyar^{2*}, Abbas Moradi³

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Abstract

Gerstmann's syndrome is caused by a left (dominant) inferior parietal lesion, particularly involving the angular gyrus or subjacent white matter of the left hemisphere. We describe case of an 80 year old right handed man admitted to our hospital with history of sudden onset of blurred vision. At first in neurological examination, he had left homonymous hemianopia and characteristic features of Gerstmann's syndrome. In the requested paraclinical test, Computed Tomography (CT) scan showed hypo dense area in the right occipital lobe with expansion to parietal and temporal lobe. Gerstmann's syndrome is characterized by four symptoms: agraphia, acalculia, finger agnosia and right-left disorientation. One or more of these manifestations may be associated with word blindness (alexia) and homonymous hemianopia or lower quadrantanopia. In our case, Gerstmann's syndrome is caused by a lesion in non - dominant hemisphere, which made this case worth for reporting.

Keywords: Gerstmann's syndrome; angular gyrus; dominant hemisphere

Address: Hamedan University of Medical Sciences, Hamedan, Iran

Tel: +98 9366531472

Email: s.danshyar72@yahoo.com

Introduction

Stroke is the third cause of death and the first cause of permanent disability, especially among people older than 60 years of age (1). Stroke is a sudden onset of a neurological defect that lasts more than 24 hours (2). It is usually result of predisposing condition that originated years before, such as hypertension, cardiac disease, diabetes, etc (3). The resultant neurologic syndrome corresponds to a portion of the brain that is supplied by one or more cerebral vessels (4). The clinical picture that results from an occlusion of any artery differs in minor way from one patient to another,

but there is sufficient uniformity to justify the assignment of typical syndrome to each of the major cerebral arteries and their branches (4). A careful history and neurologic examination can often localize the region of brain dysfunction. If this region corresponds to particular arterial distribution, the possible causes responsible for the syndrome can be narrowed (2). The current method of study for cortical activity is by functional imaging techniques (Positron Emission Tomography (PET) and functional Magnetic Resonance Imaging (fMRI). (4) Gerstmann's syndrome which consists of finger agnosia, acalculia, right -left

¹Assistant Professor, Department of Neurology, Faculty of Medicine, Hamedan University of Medical Sciences, Hamedan, Iran.

² Student Research Committee, Hamedan University of Medical Sciences, Hamedan, Iran (Corresponding Author)

³ Department of Community and Family Medicine, School of Medicine, Hamedan University of Medical Sciences, Hamedan, Iran

disorientation and agraphia may be seen with dominant hemisphere parietal lesion (5). We present a case of Gerstmann's syndrome caused by infarction of angular gyrus of non-dominant hemisphere.

Case report

Our patient was an 80- year- old right handed man whose chief complaint was sudden onset of blurred vision in left eye. He had no history of hypertension and prior neurologic problem. At the time of admission he had high level of blood pressure. He was altered and had orientation and could speak fluently. In cranial examination of patient, his visual field was impaired in

left eye (left homonymous hemianopia). He had difficulty in writing but his reading was normal. He made mistake in distinguishing right from left. We observed a concomitant impairment in discriminating his fingers and his ability to perform calculation was impaired. There was no change in muscle strength, skin sensation and coordination in his limb. Other neurological exams were normal. A brain CT scan performed on the day of onset showed hypodense area in right occipital lobe with expansion to parietal and temporal lobe. In patient's Magnetic Resonance Imaging (MRI), the following images were obtained.

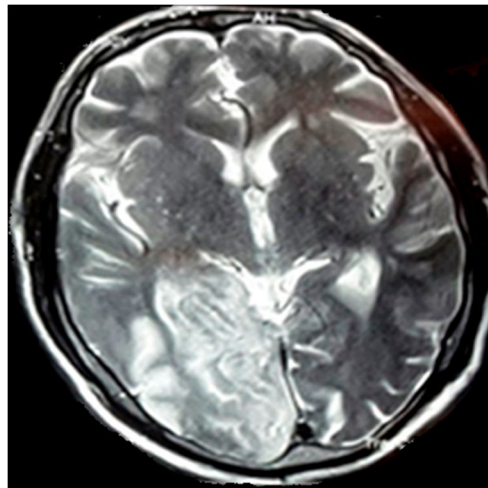


Fig1. T2W MRI, Right hyperintensity region in occipitoparietal

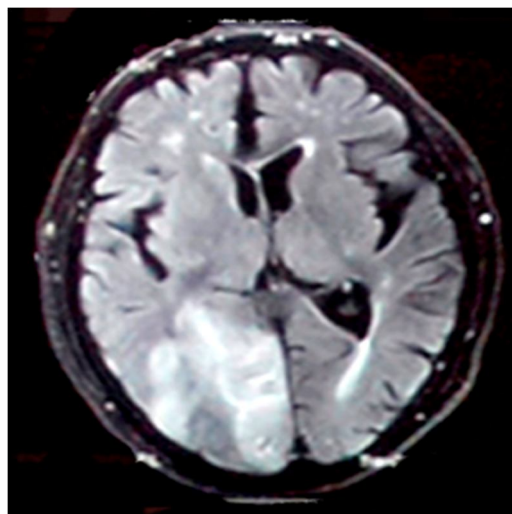


Fig 2. In Flair view, hyperintensity in right parietooccipito-temporal region

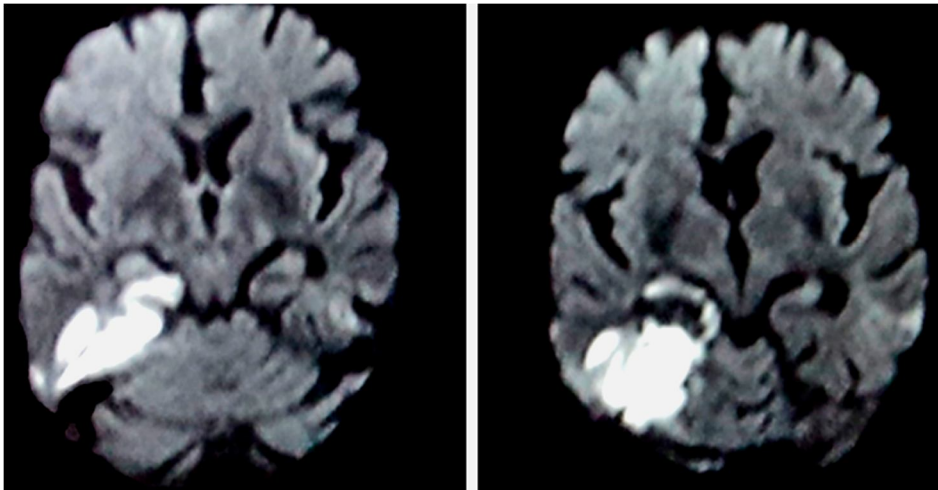


Fig 3. DWI image, hyperintensity in right parietooccipito temporal region

Discussion

For the first time in 1924, Austrian neurologist Joseph Gerstmann described the case of a 53-year-old patient presenting agraphia, acalculia, right-left disorientation and difficulty moving specific fingers when requested by the examiner, clinical findings related to cerebrovascular syndrome with left hemisphere involvement (6). Gerstmann's syndrome is characterized by four symptoms: agraphia, acalculia, finger agnosia and right-left disorientation (7). Generally, attributed to lesion in angular gyrus of dominant hemisphere (8). One or more of these manifestation may be associated with word blindness (alexia) and homonymous hemianopia or lower quadrantanopia (4). We introduced a patient who suffered from Gerstmann's syndrome that was caused by a lesion in non-dominant hemisphere. This was, contrary to previous reports about this syndrome, that's why we introduced it as an interesting case. This study reveals that perhaps the cause of the Gerstein syndrome is beyond our previous imagination, and maybe we'll have a similar look at Crossed aphasia that refers to language disturbance due to right-hemisphere lesions in right-handed individuals. It requires further

investigations on the nature of the Gerstmann's syndrome and its anatomical location.

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