



CASE STUDY

PSYCHO-ORGANIC SYNDROME IN BRAIN FRONTAL LOBE TUMORS

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ABSTRACT

Cognitive behavior deficits following frontal lobe tumors comprise a series of symptoms related to the involvement of the prefrontal region. So, clinical signs express the alteration of brain superior functions, creating the psychopathological syndrome, an organic psychiatric syndrome. This consists of two types of symptoms, those called negative, depressive type, the pseudo-depression syndrome, positive ones, manic type, the pseudo-maniac syndrome, also known as moria or moriatic syndrome. The frontal brain tumor is the most frequent of all brain tumors, stronger are frontal lobe connections with the limbic lobe, which explains the cognitive symptoms. Pseudodepression syndrome or apathetic syndrome is characterized by apathy, indifference, motor perseveration, loss of self, motor programming deficits. These are symptoms related to impaired dorsolateral frontal cortex. Pseudomaniac syndrome instead comprises disinhibited, impulsive behavior inappropriate jocular affect, euphoria, emotional lability, poor judgment and insight, distractibility. Orbital frontal cortex is involved in the origin of such symptoms. The limbic cortex plays an important role in the development of cognitive disorders of the frontal lobe, affecting the symptoms for the rich connection with the frontal circuits. Definitely, brain frontal lobe tumors causing cognitive disorders represent a relevant factor regarding the relational and social aspects of life.

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INTRODUCTION

Brain tumors occur when abnormal cells form within the brain. There are two main types of tumors: malignant and benign tumors. Malignant tumors can be divided into primary tumors starting within the brain, and secondary tumors that have spread from somewhere else, known as brain metastasis tumors. All types of brain tumors may produce symptoms that vary depending on the part of the brain involved. These symptoms may include headaches, epileptic seizures, visual alterations, vomiting, and mental changes, so called syndrome of intracranial hypertension. Secondary or metastatic brain tumors are more common than primary brain tumors, with about half of metastases coming from lung cancer. Primary brain tumors occur in around 250,000 people a year globally, making up less than 2% of cancers. The most common primary brain tumors are: gliomas (about 50%), meningiomas (about 21%), pituitary adenomas (about 15%). Treatment consists of surgery, complete or partial resection of the tumor with the

objective of removing as many tumor cells as possible, radiotherapy: the most commonly used treatment for brain tumors, irradiating the tumor with beta, x rays or gamma rays, chemotherapy, treatment option for cancer, however it is not always used to treat brain tumors as the blood-brain barrier can prevent some drugs from reaching the cancerous cells. In relation to the various major plant locations, by various classical statistics it shows that the frequency of brain tumors is approximately the following: frontal lobe, 22%, temporal lobe, 18%, parietal lobe, 12%, occipital lobe, 3%, cerebellum, 13%, ponto-cerebellar angle, 7%, pituitary region, 10%. More frequent early symptoms are: paralysis of the central type VII nerve, motor aphasia, in the case of the left hemisphere involvement, balance disorders, olfactory deficits. Mental disorders, early and constant, represent the most characteristic symptoms and are related to the prefrontal region, generating so called prefrontal syndrome. The term defines behavioral disorders or better psychopathological syndrome. Cognitive impairment of the frontal syndrome may involve mainly behavior, emotions, attention, memory (Queralt et al., 1993). Traditionally, the prefrontal syndrome consists from a methodological point of view of the 2 types of disorder

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representation, the pseudo-depression syndrome and the pseudo-maniac syndrome. Pseudo-depression syndrome is characterized by indifference, apathy, lethargy, decreased spontaneity, reduced sexual interest, reduction in the expression of the emotions, inability of anticipation. Karl Kleist (1934) first described these behavioral changes, portraying the apathic personality (Neumärker and Bartsch, 2003). Blumer and Benson followed the Kleist observations, finding the typical symptoms of pseudo-depression syndrome in lesions of the dorso-lateral frontal cortex. Luria (1969) named this series of symptoms akinetic-aphasic-abulic syndrome, resulting in extensive and bilateral frontal lobe lesions (Glozman, 2007). Pseudo-maniac syndrome, antagonist condition instead consist of euphoria, restlessness, sexual disinhibition, childishness, inadequate social behavior and low interest in others. This symptomatology is referred to damage of the frontal orbital cortex. It is called moria or moriatic syndrome (lat. mos-moris, custom), caused by loss of cortical inhibitory mechanisms (Fasullo, 1971). Note that the two syndromes may coexist if the injury affects both the orbitofrontal cortex and dorsolateral cortex. Pseudo-depression syndrome and Pseudo-maniac syndrome are also called syndromes with negative and positive symptoms, respectively. The memory is another cognitive function affected by frontal tumors, the frontal amnesic syndrome that concerns the working memory with the loss of new informations, confabulation, inability to organize storage strategies and mnesic recovery. Ventral medial frontal tumors are cause of amnesic symptoms. Further cognitive functions concern the loss of the capacity for judgment and problem solving, especially in the left frontal tumors, lack of self-criticism and self-correction of own mistakes. Attention disorders can concern unilateral neglect or heminattention with little awareness of disorder (Van den Berg *et al.*, 2015). Cognitive signs depend on different pathways between prefrontal cortex and limbic cortex damaged by brain tumors, involving prefrontal cortex regions through multi synaptic

connections with the amygdala, hippocampus, hypothalamus and association cortices.

Brain tumors of the frontal lobes cause personality changes, indifference to others, dysphoria, social disorders. There is therefore less self-control that drives personal strategies for solving problems and takes an incorrect analysis of the same. The patient with prefrontal syndrome lost the initiative, is inert, he speaks little and responds not relevant; is not worried, he is not anxious for himself and for others, but also euphoric and uninhibited behavior, or frankly hypomanic, often associated with language, silly, vulgar, available with the joke and often stereotyped. They are cognitive symptoms that cause changes in personality, emotional sphere, behavior, in short, human higher functions that are contained in the frontal lobe, whose alterations create serious problems regarding mainly the social life.

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