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Editorial
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Anhedonia: Could it be a Predictive Sign of Frontal Lobe Brain Tumors?

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Editorial

Anhedonia is defined as the total loss of pleasure. It is a condition present in psychiatric disorders, such as depression, psychosis, psychic alterations related to alcoholism [1]. In these pathologies it is one of many symptoms. Anhedonia is often erroneously considered synonymous with depression. In reality it is not accurate to approach the two disorders. While depression causes mood, sleep, loss of interest, but it alternates periods of well-being, anhedonia is the total loss of pleasure, the net lack of feeling interest for oneself, for others and for the habitual activities of life, how to dress well, treat your body, watch the favorite program on television [2]. A form of physical anhedonia is described causing an aversion to sexual activity. Brain tumors of the frontal lobe, of the prefrontal area, are the so-called psychic tumors, the cause of cognitive syndromes, with alterations of behavior and personality. Frontal tumors are responsible for two types of syndromes, related to tumor localization. Dorsolateral frontal tumors cause a depressive syndrome, pseudepression of Kleist or apathetic syndrome, characterized by apathy, abulia, loss of interest, listlessness, lack of concentration, while orbito-frontal tumours are responsible for a symptomatology characterized by aggressive behavior, loss of inhibition, exhibitionism, vapid gaiety. Anhedonia is one of the symptoms of apathetic syndrome, considered a sign of depression. With regard to epidemiological data, the literature offers the following results: isolated anhedonia was found in the elderly as very high percentage (38.4%) , much more present in women (46%) than men (33%) [3]. An interesting fact concerns, however, the young people. Surprisingly, about 13.5% of the youth population presents a mild anhedonic disorder [4]. These are interesting results, and anhedonia as the only symptom of some pathologies is perhaps a fact still little known. The pathophysiology of pleasure loss is not very clear, and various mechanisms are hypothesized. The most recent research suggests that anhedonia may be due to a cerebral deficiency related to the reward system, predominantly showing damage in dopaminergic pathways [5]. In practice, mechanisms of reward and sensation of pleasure, are altered, through changes in the scheme of stimulating signals. We know that dopamine is a fundamental neurotransmitter in cognitive processes, circulating in the limbic-hypothalamic pathways, causing a sense of pleasure that translates into physical and psychic wellbeing. Recall that limbic-hypothalamic dopaminergic pathways are in close connection with the prefrontal cortex. This explains the negative symptoms of anhedonia.Cases of anhedonia in brain tumors have not been reported until today. The only cases described include prostate cancer and melanoma. The prefrontal tumours would be a useful object of study, precisely because of the cognitive functions that they harm. The pseudo-depression syndrome that they cause is often treated with medications and only then neuroimaging tests are performed. Anhedonia is a symptom that may occur isolated, not as a symptom associated with depression. Studies conducted so far on the presence of anhedonia in schizophrenia and depression have given interesting results. A distinction has been made between depression and anhedonia as an isolated symptom, as a demonstration that it may present itself. In frontal lobe tumors, anhedonia may represent a predictive sign of the tumour. This could shorten the timing of the diagnosis and allow the surgeon to arrange a possible surgery. A gradual change of habits related to pleasure is to be investigated, not thinking in the first instance of a depression. The difference is subtle, but the absolute lack of pleasure is indicative of anhedonia, especially if there is lack of symptoms characteristic of depression, concerning mood, sleep, concentration, crying. When the symptoms of anhedonia are present and there is a suspicion of frontal brain tumor, as well as the use of neuroimaging, specific tests for anhedonia may be administered. They are the Pleasure Scale (PS) and the Snaith-Hamilton Pleasure Scale (SHPS) [6,7]. They consist in compiling a questionnaire containing items that need to be completed. A final score will determine

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whether the subject has signs of anhedonia. These tests are used for a long time and have a good diagnostic value. Some considerations on the pathophysiological mechanisms hypothesized in anhedonia: in *Neurobiological Mechanisms of Anhedonia* (2008), Gorwood states that anhedonia is associated with a deficiency of dopamine [5]. Dopamine is the missing neurotransmitter in anhedonia and the dopaminergic pathways that bind the frontal cortex and limbic cortex through the hypothalamus, carry pleasure [8,9]. Damage to these pathways could be responsible for the anhedonia symptom in frontal tumours [10]. It is conceivable that the deficiency of dopamine is more pronounced along the hypothalamic circuits. It is in fact known that the sensation of pleasure lies along the hypothalamic pathways that are connected to the prefrontal cortex.

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