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Letter to the Editor

Supposedly Sudden Behavioural Changes after a Stroke are not Necessarily be Related to the Structural Damage, but Rather the Psychological Reaction to it

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Letter to the Editor

We read with interest the article by Valadez-Cuen *et al*. about a 63-year-old woman with a history of right-sided basal ganglia infarction, arterial hypertension, hyperlipidemia and smoking who suffered a new left-sided basal ganglia infarction after which her addiction to nicotine and citrus-flavoured soda subsided [1]. The cessation of nicotine and soda addiction was explained by the involvement of the nucleus accumbens in stroke volume [1]. The study is noteworthy, but several points should be discussed.

First, we disagree with the view expressed in the introduction that cerebrovascular events are synonymous with stroke [1]. Cerebrovascular event is an overarching term that encompasses ischemic stroke, intracerebral or subarachnoid hemorrhage, venous sinus thrombosis, reversible cerebral vasoconstriction syndromes, dissections, or vasculitis. The term stroke is limited to ischemic stroke and hemorrhage.

The second point is that attributing addiction to a single cerebral nucleus is a simplification of a complex phenomenon that does not involve a single cerebral point, but is likely due to the impairment of network circuitry and connections between several other cerebral structures, as fMRI studies have shown [2]. It is questionable whether there really are cerebral addiction centers. Why is addiction not centered in the heart, as is the case with passion? Why are behavioral changes not observed more frequently in patients with basal ganglia stroke?

The third issue is that it is not reported whether the index patient already had the desire and intention to stop her addictive behavior before the stroke, but was unable to act on this desire due to weakness of will. Knowledge of this aspect is of crucial importance in order to assess whether the stroke could be the triggering event for the realization of the long-awaited wish.

The fourth point is that it is not reported whether the patient followed a special diet or not. Since she was diagnosed with hyperlipidemia, it is conceivable that she practiced a high-fat diet that led to hyperlipidemia, atherosclerosis and the cerebrovascular event. In the event that she followed a specific habitual diet, it would be interesting to know whether the index patient's dietary habits also changed after the stroke, such as her dependence on soda and high-fat diet.

The fifth point is that the MoCA is not the ideal test to assess whether cognitive decline is present. More reliable than the MoCA and the MMSE for assessing cognitive performance is extensive neuropsychological testing using the Wechsler Test of Adult Reading Ability, the Wechsler Adult Intelligence Scale, a repeatable battery for assessing neuropsychological status, Digit Span, Trail Making Test, Boston Naming Test, Lexical Fluency Total, VASU-II Vocabulary, RBANS Picture Naming, Target Cancellation Time, WASI-II Matrix Reasoning, Geriatric Depression Scale and Beck anxiety inventory [3].

The sixth point is that behavioral changes after life events such as a stroke are not uncommon [4]. Sometimes patients have to experience a serious threat in order to change their mind and their fixed behavior on their own. This includes addictive behavior. It is not uncommon for patients to change their paradigms after a serious illness. Another argument against the location of the stroke as the cause of the behavioral change and paradigm shift is that such sudden changes in behavior and attitude have not been frequently reported in patients with stroke in the basal ganglia. Behavioral changes after stroke are more frequently reported when the stroke location involves the fronto-convex or fronto-basal area [5].

In summary, this interesting study has limitations that put the results and their interpretation into perspective. Eliminating these limitations could strengthen the conclusions and substantiate the study's message. All open questions need to be clarified before readers uncritically accept the study's conclusions. Supposedly sudden behavioral changes after a stroke are not

necessarily related to the structural damage, but rather to the psychological reaction to it.

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