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Two Types of Korsakoff Alcoholism in Reference to Habenula: A New Opinion

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Abstract

Herein it is newly suggested that there are at least two types of Korsakoff alcoholism, one resulting from alcohol intake as regular appetitive habit, while another for relief of psychological stress. It is required the habenula intact to control the intake volume of alcohol, so that it is required the habenula intact for the regular appetitive habit without vomit. Whereas for relief of psychological stress, it is necessary to inhibit the activities of habenula in mediating stress and depression, which would gradually result in the degeneration of limbic input to the habenula. In this regard, it is classified the Korsakoff alcoholism into two types at early stage in reference to habenula.

Keywords: Korsakoff syndrome; Ethanol; Habenula; Stria medullaris; Psychological stress; Memory

Opinion

Korsakoff syndrome from alcohol addiction manifests extensive dysfunctions in neurological structures, varying from case to case [1,2]. Obviously, there are many subtypes of Korsakoff alcoholism. Herein, it is newly suggested that there are at least two types of Korsakoff alcoholism, one resulting from alcohol intake as regular appetitive habit, while another for relief of psychological stress.

For those Korsakoff patients resulting from alcohol intake as long term regular habit of appetitive taste, it is necessary to control the intake volume of alcohol to keep in good health without vomit. Bad health or vomit would cause psychological aversion to the regular appetitive habit. Recently, it was demonstrated that the lateral habenula was the neural structure responsible for the control of alcohol volume of intake [3,4]. Obviously at early stage, it is necessary to have the habenula intact for maintaining the appetitive habit of alcohol intake regularly for long in health without vomit.

In this situation, the neural structures other than habenula are vulnerable to the chronic alcohol toxicity. It is necessary to note that the white matters are more vulnerable to alcohol toxicity than grey matters [1,2], implicating that the neural fibers around the mammillary bodies may undergo degeneration earlier in alcohol toxicity than commonly observed degeneration of mammillary bodies [1,2]. Some other neural structures lying beyond the limbic system may also undergo degeneration in some Korsakoff patients, such as the lateral thalamic nuclei [1,2]. It is speculative here that these structures are likewise vulnerable to degeneration from regular appetitive habit with functional habenula at initiative stage.

For those Korsakoff patients resulting from alcohol intake for relief of psychological stress rather than appetitive taste, the intake alcohol ameliorates the psychological stress. It is well known that both medial and lateral habenula nuclei play roles in mediating stress and depression [5,6]. Obviously, the intake alcohol inhibits the limbic input of psychological stress to the habenula, especially those via the stria medullaris [7]. In this situation, the neural structures mediating the psychological stress, including the stria medullaris, are vulnerable to degeneration due to alcohol inhibition.

As the limbic structures play functions in learning and memory [7] as well as in emotional stress and depression [8,9], it is definite that degeneration of these limbic structures including the stria medullaris and habenula from alcohol inhibition of psychological stress would result in the amnesic symptom in some Korsakoff patients. It was reported that, in Korsakoff patients E.A. and H.J [10] as well as J.W. and B.C [11], the lesions were restricted only to a small region immediately medial to the mediodorsal thalamic nucleus but not the mediodorsal nucleus itself, which might destroy the stria medullaris and habenula.

In all, it is classified the Korsakoff alcoholism into two types at early stage in reference to habenula, one from alcohol intake as regular appetitive habit, while another for relief of psychological stress.

Conflict of Interest

The author declares no conflict of interest nor financial support for this work.

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