

## Morphological Investigation of the Nucleus of White Blood Cells at Opiate Dependences and also in Case of Naltrexon Application as an Opiate Antagonist

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### ABSTRACT

Have been investigated the white blood cells of 20 patients, suffering from opiate dependence. Morphological changes of nucleus were detected using the electronic microscope. Investigations have shown that application of opiate antagonists at treatment of opiate dependences is justified from morphological point of view, since it leads to certain positive clinical effects. Administration of naltrexon in the period of remission relatively increased the area of euchromatin and widened perinuclear halo; nuclear clasmatosis was poorly expressed; edges of nucleus were even. On the background of naltrexon application, the nucleus was lesser repressed. However, it must be mentioned that suggested method of treatment does not provide complete recovery and perfect functioning of the cells.

**KEYWORDS:** *naltrexon, opiate dependence, euchromatin-heterochromatin, clasmatosis, perinuclear halo, pathological homeostasis*

As is known, at opiate dependences the pathological homeostasis of an organism displays, characterized by firm and morphological changes at the level of a cell. The state of white blood cells is the dynamic indicator of changes that develop in organism.

The present work was aimed to investigate the structural changes of white blood cells determining formation of opiate dependence, and also those morphological mechanisms, which explain positive clinical effect at application of the opiate antagonist - naltrexon.

### MATERIAL AND METHOD

The blood of 20 patients, suffering from opiate dependence has been investigated. Of 20 patients receiving naltrexon, 10 had remission with duration of 3 months. The blood for testing was taken, when patients were under influence of opiates with abstinence syndrome and at the end of first and third months of remission. Prepared material was observed under the electronic microscope.

### RESULTS AND DISCUSSION

Opiate narcosis results in swelling and stretching of nucleus of white blood cells. After narcosis the nucleus is wrinkled, and within the nucleus, prevails inactive form of chromatin- heterochromatin. At the same time clasmatosis of nucleus is observed as well, nuclear edges are uneven. After three-month remission morphological appearances were unchanged.

Administration of naltrexon in the period of remission relatively increased the area of euchromatin and widened perinuclear halo. Nuclear clasmatosis was poorly expressed; edges of nucleus were even.

Investigations have shown that opiate narcosis results in formation of pathological homeostasis. Narcosis leads to activation of nucleus, which is confirmed by increased area of euchromatin. So, protein synthesis is increased at this instance [2].

After narcosis nucleus becomes repressed. The mentioned fact could explain difficulties in treatment in case of opiate dependences.

During the periods of remission, on the background of naltrexon, the nucleus was lesser repressed than in cases, when naltrexon was not used.

On the background of naltrexon administration, formation of greater perinuclear halo, probably provides reduction in clasmatosis.

On the one hand, greater perinuclear halo disorders the above-mentioned pathological homeostasis, but on the other hand - turns the functioning of the cell into unusual state, which was expressed by weakened functional and structural connections between nucleus and cytoplasm [3].

Coming from the aforesaid, it could be concluded that application of opiate antagonists in case of treatment of opiate dependences is justified from the morphological point of view, however it does not provide perfect functioning of the cell [4].

The data, obtained after investigations, completely are comparable to those clinical results, which are received in case of naltrexon application for treatment of opiate dependences.

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## **Морфологические исследования ядра белых форменных элементов крови при опиатной зависимости и при применении опиатного антагониста налтрексона**

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### **Р Е З Ю М Е**

Изучен морфологический материал 20 пациентов с опиатной зависимостью. Морфологические изменения в ядрах исследовали с помощью электронного микроскопа. Установлено, что при применении опиатного антагониста - налтрексона с целью лечения опиатной зависимости динамика морфологических изменений коррелирует с положительным клиническим эффектом. Применение налтрексона в период ремиссии отчетливо сопровождается увеличением площади эухроматина и перинуклеарного ореола. Клазматоз ядра выражен слабо; ядра менее репрессированы и края становятся ровнее в сравнении со случаями, когда налтрексон не применялся. Таким образом, применение опиатных антагонистов при лечении опиатной зависимости оправдано, хотя и не обеспечивает полноценного функционирования клетки.

**Ключевые слова:** *налтрексон, опиатная зависимость, эухроматин-гетерохроматин, клазматоз, перинуклеарный ореол, патологический гомеостаз*