

травматичним пульпітом і 25 – гострими і хронічними формами пульпіту, які потребували місцевого знеболення стоматологічного лікування. 30 здорових осіб із відсутністю каріозних уражень і пульпіту аналогічних груп зубів, ідентичного вікового періоду слугували контролем. Для ефективного проведення місцевого знеболення під час амбулаторного лікування пацієнтів з гострим глибоким карієсом зубів, гіперемією пульпи і гострим травматичним пульпітом біологічним методом маючи на меті збереження життєдіяльності пульпи та її функцій доведена перевага внутрішньокісткового методу знеболення. Знеболення стоматологічних маніпуляцій під час лікування пацієнтів з гострими і хронічними формами пульпіту екстирпаційним методом на нашу думку доцільно проводити інфільтраційним, провідниковим та внутрішньокістковим методами введення амідних анестетиків з вмістом катехоламінів 1:100000, які дозволяють попередити кровоточивість пульпи при лікуванні.

Ключові слова: карієс зубів, пульпіт, місцеве знеболення.

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травматическим пульпитом и 25 - острыми и хроническими формами пульпита, нуждающихся в местном обезболивании стоматологического лечения. 30 здоровых лиц с отсутствием кариозных поражений и пульпита аналогичных групп зубов, идентичного возрастного периода служили контролем. Для эффективного проведения местного обезбоживания во время амбулаторного лечения пациентов с острым глубоким кариесом зубов, гиперемией пульпы и острым травматическим пульпитом биологическим методом с целью сохранения жизнедеятельности пульпы и ее функций доказано преимущество внутрикостного метода обезбоживания. Обезболивание стоматологических манипуляций при лечении пациентов с острыми и хроническими формами пульпита экстирпационным методом по нашему мнению целесообразно проводить инфильтрационным, проводниковым и внутрикостным методами введения амидных анестетиков с содержанием катехоламинов 1:100000, которые позволяют предупредить кровоточивость пульпы при лечении.

Ключевые слова: кариес зубов, пульпит, местное обезбоживание.

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ADAPTIVE RESPONSES OF CARDIOVASCULAR SYSTEM AND NON-SPECIFIC RESISTANCE OF THE BODY IN CASES OF MANDIBULAR FRACTURE

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The purpose of the research was to study the peculiar features of the autonomic nervous system response to the injury by the parameters of cardiovascular system and changes in non-specific resistance of the body in cases of open traumatic mandibular fracture in patients of different psychosomatic personality types. Sixty males diagnosed with traumatic open unilateral mandibular angle fracture, as well as 36 extraverts and 24 introverts, were examined. The study of vegetative tonus has proved that among the extraverts in 44.4% of cases, the autonomic nervous system is in a state of functional balance, whereas in the introverts it only occurs in 25% of cases. It has been established that extraverts in the early post-traumatic period have better adaptabilities of the non-specific resistance system.

Key words: fracture, mandible, personality type, Kerdo index, Garkavi index.

The study is a fragment of the research project "Optimization of conservative and surgical treatment of patients with defects and deformations of the tissues in the maxillofacial area", state registration No. 0110U004629.

Recently, in the literature it has been proved that stress responses that follow the mandibular fractures have a significant effect on the course of bone wound healing and frequency of purulent complications [5, 6, 9, 10, 11]. In particular, Voloshyna L.I., Rybalov O.V. state that each third injured introvert experiences traumatic osteomyelitis, whereas the every tenth extrovert patients do [4]. It is obvious that the individual features of the organism are those factors that must be taken into account when conducting treatment and recovery procedures. Among the indicators that present the impact of injury on the body, the response of cardiovascular system and non-specific resistance of the body are important. However, no reports on their changes in cases of traumatic mandibular fractures in the patients of different psychosomatic personality types have been found in the literature. That is why it has come to be the aim of our study.

The **purpose** of the paper was to study the peculiar features of the response of autonomic nervous system to the injury by the parameters of cardiovascular system and changes in non-specific resistance of the body in cases of traumatic open mandibular fractures in the patients of different psychosomatic personality types.

Material and methods. Sixty male patients with traumatic unilateral open mandibular angle fractures, of the average age of 25.2±5.0 years old, were examined. The patients were divided into two groups: the extraverts (group 1, 36 people), the introverts (group 2, 24 persons). The study of vegetative tonus was carried out, which was evaluated by blood flow parameters. The pulse rate and blood pressure were determined. The Kerdo index [1, 2, 3, 8] was assessed by these blood parameters. According to the

author, the changes in the ratio of diastolic pressure rate and the number of pulse beats were associated with the changes in vegetative tonus. Vegetative tonus regulated the activity of all organs in adaptive responses of the body, its evaluation is carried out, in particular, with the addition of the Kerdo index [1, 2, 3, 8]. Calculation of the index was performed according to the formula:

$$IR = (1 - d/p) \cdot 100, \text{ where}$$

IR – Kerdo index;

d – index of diastolic blood pressure;

p – heart rate.

The index value above zero proved the advantage of sympathicotonic effects in the activity of autonomic nervous system; below zero, on the contrary – the advantage of parasympathicotonic effects; if the index was zero, it proved a functional balance in the activity of autonomic nervous system [8].

The body defences were studied by leukocyte blood parameters by means of the Garkavi index evaluation, which was determined by assessment of the ratio, in percents, of the number of lymphocytes to the number of segmental leukocytes. Evaluation of leukocyte index allowed revealing the presence of antistress responses in the body. The reference values of the Garkavi index were in the range of 0.3-0.5 [7].

For statistical analysis of the study results, a parametric Student's t-test was used. Statistica for Windows version 8.0 (StatSoft Inc., USA), Microsoft Excel 2007 (Microsoft, USA) software were used for statistical and graphical analysis of the results.

Results of the study and their discussion. Average parameters of pulse rate in cases of traumatic mandibular fractures in the patients of different psychosomatic personality type. Increased pulse rate was established in cases of traumatic mandibular fractures in patients of different psychosomatic type of person on the 1st, 3rd, 7th day after trauma (table 1). The pulse rate in both study groups at day 1 after trauma tended to increase. Statistically significant changes were detected in extraverts ($P < 0.05$). At the 3rd and 7th day after the trauma, pulse rate decreased in both groups. On the 7th day, the study rate in patients of both groups was within the limits of the control group.

Table 1

Average parameters of pulse rate in cases of traumatic mandibular fractures in the patients of different psychosomatic personality types, beats/min (M±m)

Group of the examined patients	Day of examination		
	1 st	3 rd	7 th
Control, n=30	66±3		
Extraverts, n=36	78±4*	70±3	67±4
Introverts, n=24	74±9	67±6	64±5

Note: * statistical significance according to the Student's criterion compared to the control ($p < 0.05$)

Average blood pressure rates in cases of traumatic mandibular fractures in the patients of different psychosomatic personality type. Increased blood pressure was established in the first three days after trauma in patients of both psychosomatic types of personality (table 2). An increase of systolic blood pressure in the first three days after trauma is more pronounced in extraverts throughout the duration of observation, and in persons-introverts on the contrary - diastolic. On the 7th day after trauma, the stabilization of pressure in both groups did not take place.

Table 2

Average blood pressure rates in cases of traumatic mandibular fractures in the patients of different psychosomatic personality types

Index		Group of the examined patients						
		Control, n=30	Introverts, n=24			Extraverts, n=36		
			Day of examination					
		1 st	3 rd	7 th	1 st	3 rd	7 th	
Blood pressure rate, mmHg	Systolic	127	132	129	123	139	132	128
	Diastolic	72	87	84	82	82	81	87

Blood leucogram of the patients with traumatic mandibular fractures depending on their psychosomatic personality type. It was established, that all indicators of leucogram, except the percentage of band neutrophils, are within the values of reference values (table 3). In person-introverts, the number of band neutrophils was higher and this difference was statistically significant ($P < 0.05$).

Discussion. The response of cardiovascular system in persons of different psychosomatic personality types suffering from mandibular injury had some peculiar features. It should be noted that in

the most cases, their pulse rate did not exceed the reference values (60-80 beats/min), but the dynamics of its control was different. On the first day of the study, this rate in both studied groups was higher than that of the control group, but statistically significant changes were registered only in the extraverts, with the tendency that the introverts had a lower pulse rate. This tendency was maintained hereafter, but even on the 7th day of the study, a complete control of pulse rate in both groups was not evidenced.

Table 3

Blood leucogram of the patients with traumatic mandibular fractures depending on their psychosomatic personality types, %

Index	Reference values	Group of the examined patients		Statistical significance
		Extraverts, n=36	Introverts, n=24	
Eosinophils	0.5-5	2.2±0.2	1.8±0.1	p>0.05
Band neutrophils	1-6	2.7±0.1	3.2±0.1	p<0.05
Segmented neutrophils	47-72	64.5±2.33	64.8±4.08	p>0.05
Lymphocytes	19-37	26.3±1.66	25.7±4.23	p>0.05
Monocytes	3-11	4.1±0.9	4.37±0.7	p>0.05

A similar trend was observed regarding the rates of arterial pressure at different periods of the study. The extraverts experienced a clear tendency to its increase during all period of the monitoring compared with the introverts, but all rates of the study groups were within the normal reference values.

The next stage of our research was to determine the vegetative tonus by hemodynamics rates by means of Kerdo index evaluation. The assessments proved that among the extraverts, there were 16 (44.4%) patients, whose Kerdo index was zero that evidenced a functional balance in the activity of autonomic nervous system. In 13 (36.1%) people, the Kerdo index was higher than zero (the average index value was +27) that proved the advantage of sympathicotonic effects. In 7 (19.4%) people, the Kerdo index was less than zero and this evidenced the advantage of parasympathicotonic influences. In 6 (25.0%) introverts autonomic nervous system was in a state of functional balance, in 4 (16.7%) the prevalence of sympathicotonic effects was proved (mean index value +16), and in 14 (58.3%) – of parasympathicotonic influences.

Thus, the results of the study proved that both antagonistic sections of autonomic nervous system simultaneously participated in the regulation of adaptation processes in different correlation. However, among the extraverts, a higher percentage of patients, whose autonomic nervous system was in a state of functional balance and sympathicotonic effects prevailed was evidenced, while in the introverts – a lower percentage of patients, whose nervous system was in the stage of functional balance and significantly more persons, whose sympathicotonic influences dominated in the activity of autonomic nervous system. Sympathicotonic manifestations were accompanied by acidosis, decrease in the ratio of K/Ca (relative advantage of calcium), decrease in the ratio of albumins/globulins (relative advantage of globulins), increased blood sugar levels, decreased serum fat, increased heart rate, etc. The parasympathicotonic effects, on the other hand, were characterized by alkalosis, increase in the ratio of K/Ca (relative advantage of potassium), increase in the ratio of albumins/globulins (relative advantage of albumins), decrease in blood sugar, increase in serum fat, decrease in heart rate, etc.

Hence, the attained results proved that the features of metabolism in adaptive responses to a trauma were inherent for the patients of different psychosomatic types. They were manifested in the clinic by a peculiar course of reparative osteogenesis, as well as different incidence of purulent complications.

To obtain information on the characteristic features of leukocyte responses to injury in the body of the patients of different psychosomatic personality, a complete analysis of leucograms was performed and leukocyte index of Garkavi was evaluated, as complex immune and metabolic changes were presented in the morphological composition of white blood [9]. It was established that the percentage of all blood corpuscle of blood leucograms was within the reference values. At the same time, the number of band neutrophils was significantly higher in the introverts.

The ratio of the Garkavi index value in the examined groups on the 3rd day after trauma is graphically presented in figure 1. As presented in the figure, there were some peculiar features of adaptive responses in the examined groups.

The fact that on the 3rd day after the injury among the extraverts the number of patients with the rate of the Garkavi index within the reference values was much higher and the number of patients was less in those with Garkavi index beyond the reference values: increased or decreased. This proved the better adaptability of non-specific resistance systems of extraverts in the early post-injury period. The decrease in the index proved lymphopenia or increase in the number of segmental neutrophil leukocytes. The

function of segmental neutrophils is in activation and implementation of phagocytosis with pathological agents in blood as well as in tissues. This function is implemented owing to the ability of segmental neutrophils to independent shifting by means of pseudopodia. Capturing an alien agent, neutrophil destroys it. At the same time, the leukocyte dies itself, secreting into the environment a specific substance that engages other protective cells in the pathological focus. The increase in the level of the index proves lymphocytosis or decrease in the number of segmental neutrophils. A slightly different course was observed on the 7th day of the examination (fig. 2).

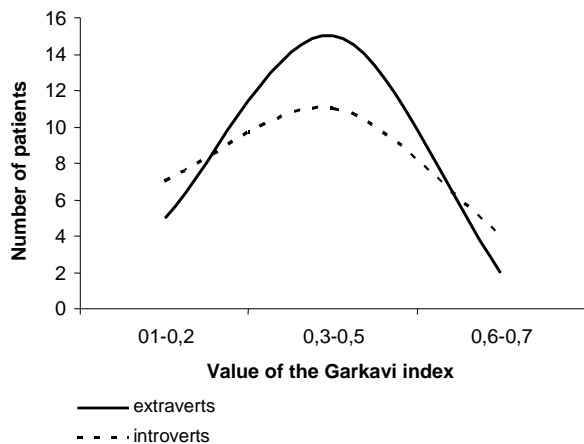


Fig. 1. Percentage of the patients by the Garkavi index depending on their psychosomatic personality type on the 3rd day after the injury.

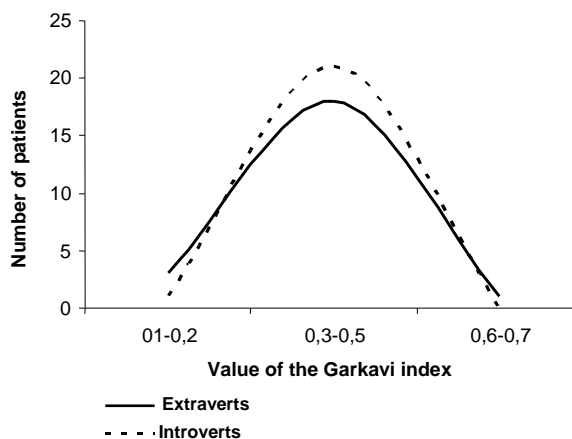


Fig. 2. Percentage of the patients by the Garkavi index depending on their psychosomatic personality types on the 7th day after the injury.

According to the figure, in both compared groups, the curves of the number of patients almost coincided that proved the normal system state in the patients of both psychosomatic types. Thus, according to the results of the study by the Garkavi index, the normal blood parameters were more likely to be present in the extraverts and proved their higher adaptabilities in the early post-traumatic period. However, by the 7th day there was no significant difference between the compared groups.

The prospects of further research are the study of the features of the course of traumatic mandibular fractures healing in the patients of different psychosomatic personality types.

Conclusion

The studies of vegetative tonus in the patients with traumatic mandibular fractures have proved that there are some peculiar features of the adaptive responses in people of different psychosomatic types. In the extraverts, in 44.4% of the patients vegetative nervous system is in a state of functional balance, in 36.1% sympathetic influences dominate, in 19.4% – parasympathicotonic. In the introverts, in 25.0% of the patients autonomic nervous system is in a state of functional balance, in 16.7% sympathetic influences dominate, in 58.3% – parasympathicotonic. It has been established that extrovert patients have better adaptability of non-specific resistance system, which are more pronounced in the early period after injury.

The prospect of further research in this field, in our opinion, is studying the peculiarities of separate parts of the bone tissue recovery process depending on the psychosomatic personality type.

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Реферати

АДАПТАЦІЙНІ РЕАКЦІЇ СЕРЦЕВО-СУДИННОЇ СИСТЕМИ І НЕСПЕЦИФІЧНОЇ РЕЗИСТЕНТНОСТІ ОРГАНІЗМУ У ПОСТТРАВМАТИЧНИХ ПЕРЕЛОМАХ НИЖНЬОЇ ЩЕЛЕПИ

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Метою дослідження було вивчення особливостей реакції вегетативної нервової системи на травму за показниками серцево-судинної системи і змінами неспецифічної резистентності організму у постраждалих з травматичними відкритими переломами нижньої щелепи різного психосоматичного типу особистості. Обстежено 60 осіб чоловічої статі, у яких діагностовано травматичні односторонні відкриті переломи нижньої щелепи в області кута, з них 36 екстраверта і 24 інтроверта. Дослідження вегетативного тону показало, що серед осіб-екстравертів в 44,4% випадків вегетативна нервова система перебуває в стані функціонального рівноваги, тоді як у інтровертів – лише в 25% випадків. Встановлено, що екстраверти в ранній період після травми мають більші адаптаційні можливості системи неспецифічної резистентності.

Ключові слова: перелом, нижня щелепа, тип особистості, індекс Кердо, індекс Гаркаві.

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АДАПТАЦИОННЫЕ РЕАКЦИИ СЕРДЕЧНО-СОСУДИСТОЙ СИСТЕМЫ И НЕСПЕЦИФИЧЕСКОЙ РЕЗИСТЕНТНОСТИ ОРГАНИЗМА У ПОСТТРАВМАТИЧЕСКИХ ПЕРЕЛОМАХ НИЖНЕЙ ЧЕЛЮСТИ

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Целью исследования было изучение особенностей реакции вегетативной нервной системы на травму по показателям сердечно-сосудистой системы и изменениям неспецифической резистентности организма у пострадавших с травматическими открытыми переломами нижней челюсти различного психосоматического типа личности. Обследовано 60 человек мужского пола, у которых диагностированы травматические односторонние открытые перелома нижней челюсти в области угла, из них 36 экстраверта и 24 интроверта. Исследование вегетативного тонуса показало, что среди лиц-экстравертов в 44,4% случаев вегетативная нервная система находится в состоянии функционального равновесия, тогда как у интровертов только в 25% случаев. Установлено, что экстраверты в ранний период после травмы имеют большие адаптационные возможности системы неспецифической резистентности.

Ключевые слова: перелом, нижняя челюсть, тип личности, индекс Кердо, индекс Гаркави.

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ОЦЕНКА МОЗГОВОГО КРОВОТОКА И УРОВНЯ СОЗНАНИЯ У ПАЦИЕНТОВ С СИНДРОМОМ ОСТРОЙ ЦЕРЕБРАЛЬНОЙ НЕДОСТАТОЧНОСТИ

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Статья посвящена результатам реоэнцефалографического исследования проблемы соответствия состояния артериального притока к головному мозгу уровню сознания при острой церебральной недостаточности. Демонстрируются анализ и отдельные клинические наблюдения за 116 пациентами с синдромом острой церебральной недостаточности. Исследование проводилось у пациентов с мозговым инсультом, тяжелой черепно-мозговой травмой, дисциркуляторной энцефалопатией и постреанимационной болезнью. Показано, что в большинстве случаев имеется очень тесная связь между интенсивностью мозгового кровотока и оценкой депрессии функции сознания по шкале ком Глазго. Для тех пациентов, у которых зависимость была клинически очевидной, величина коэффициента линейной корреляции составила 0,877. У пациентов с отсутствием явных клинических признаков связи величина коэффициента Пирсона была равной 0,489. На основании результатов югулярной венозной оксиметрии, мониторинга центральной гемодинамики при помощи артериотензометрии, венотензометрии, а также интегральной биполярной реографии, по результатам пульсоксиметрии предполагается, что главными причинами несоответствия сознания и интенсивности артериального мозгового притока являются микроциркуляторные нарушения и митохондриальная дисфункция, ограничивающие потребление кислорода.

Ключевые слова: реоэнцефалография, острая церебральная недостаточность, мозговой кровоток, сознание.

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Любой активно функционирующий орган получает объем крови, соответствующий его метаболическим потребностям, а недостаток кровоснабжения приводит к развитию патологии и нарушению функции органа. В связи с этим, большой клинический интерес представляет изучение органного и системного кровотока. Одним из неинвазивных методов изучения кровотока является