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Dynamic Characteristics of Nonspecific Adaptive Body Response of Patients with Mandibular Fractures at using «Epsorin»

ABSTRACT

Efficiency evaluation of «Epsorin» in complex treatment of mandibular fractures was conducted. The use of «Epsorin» revealed changes ofvalues of nonspecific adaptive response, which were connected with positive phase increasing and significantly reducing of phase «stress», which indicated its clinical efficacy.

Keywords: nonspecific adaptive response, osteosynthesis, stress reaction, leukocytosis, prevention of complications.

INTRODUCTION

Nowadays non-firearm damages of maxillofacial area have a tendency to increase, and that is one of the most actual problem of medicine [2, 6, 9, 10]. The fractures of mandible occupy a significant part in the structure of damages of the facial bones [4, 8]. According this, in the health care facilities of maxillofacial surgery a lot of attention is put on the improvement of complex treatment of traumatic lesions of the mandible [2, 6].

It should be noticed, that the fractures of mandible are accompanied by pain syndrome, destruction of a large amount of tissues, incoming of products of autolysis to the bloodstream, where the particular role play immune and nonspecific factors of resistance [1, 3, 5, 7]. The action of strong inadequate stimuli to the body leads to the depression ofthymico-lymphatic system and to the activity of the endocrine glands, while the secretion of ACTH and glucocorticoids, on the contrary, are increased. At the same time, the certain quantitative and qualitative changes of white blood are noticed, on the basis of which an assessment and an analysis of nonspecific adaptive response of the organism are made [3, 7, 10].

The aim. To make a comparative analysis ofnonspecific adaptive response changes in patients with mandibular fractures who take "Epsorin" on the basis of clinical and laboratory studies.

MATERIALS AND METHODS

A comprehensive clinical and laboratory examination of 129 patients with mandibular fractures between the ages of 18 and 40 is done,they were hospitalized in a Department of Maxillofacial and Plastic Surgery SBI Sakha (Yakutia) "Republican Hospital №2 - Center of emergency medical care." In this case, for a comparative analysis of the "Epsorin" 2 groupswere formed: the main group (n = 47 patients) and the control group (n = 82 patients). The immobilization of jaw by the tooth intermaxillary tires and extraoralintralesionalosteosynthesiswere done to all patients. The formed groups were representative according all the studied parameters.

"Epsorin" (an extract from the reindeer antlers) was developed in 1991-1992 by FBSIS "Institute of Biological Problems of the permafrost zone" of SD RAS (Yakutsk). "Epsorin" has a bio-stimulating and antioxidant effect to the body. It is a complex of biologically active substances, which comprises 0.6 g/l of protein, 0.2 g/l of phospholipids, 0.75 g/l of free amino acids, 2 g/l of esters of unsaturated fatty acids, 0.8 g/l macro- and microelements (Fe, Mg, Mn, Co, Zn, Cu, Ca, F, I), a balanced set of vitamins (100 mg/l of vitamin A, 1,0 mg/l of vitamin D, 230 mg/l of vitamin E, 10 mg/l of vitamin K, 3,3 mg/l of vitamins B group, 15 mg/l vitamin H, 30 mg/l

of folic acid, 1.35 mg/l of vitamin C etc.), 0.2 mg/l two and three-basic esters, organic acids (amber, citric, isocitric, oxaloacetic, malic), 5.0 mg/l of at least 8 fractions prostaglandins, 9 mg/l of biologically active derivatives of cholesterol (gluco-, mineralocorticosteroidsand sex hormones), and others. On the basis of its structure features and properties, we used "Epsorin" asan adaptogenic drug in treatment of mandibular fractures.

Assessment of nonspecific adaptive response (NAR) was carried out by I.M. Meltzer and co-writers (1997), L.H.Garkaviand co-writers (1998), it was based on the proximate analysis of blood leukocyte (counting was performed on 300 cells). Various phases of NAR are characterized by the following parameters: "sustained activation" - (lymphocytes)/(neutrocytosis) = from 0.5 up to 1.0 in a ratio (monocytes)/(eosinophils) = from 1.0 up to 6.0; "stable training" - (lymphocytes)/(neutrocytosis) = from 0.5 up to 0.3 in a ratio (monocytes)/(eosinophils) = from 1.0 up to 6.0; "stress" - (lymphocytes)/neutrocytosis) = from 0.3 or less at any ratio (monocytes)/(eosinophils); "intermittent activation" and "unstable training" - with a ratio (monocytes)/(eosinophils) = from 1.0 or below, up 6.0 or higher. Reaction of "stable activation" and "sustainable training" were considered as "positive", reaction of "unstable activation" and "unstable training" - as "transient", reaction of "stress" and "reactivation" - as negative. The study was performed on admission through the 2nd and 14th days after the operation.

Statistical analysis of the material was carried out by standard methods of variation statistics.

RESULTS AND DISCUSSION

Analysis and evaluation ofcomplete blood countresults characterizes the existence of certain features (table 1). ESR increased in the control and experimental group in two days after intralesionalosteosynthesis, and accounted for 23,75±0,79 mm/h and 22,28±1,08 mm/h (P>0,05). Wherein in group «Epsorin» was significantly determined reduction of thisindicator in 14 days after operation to 16,63±0,82 mm/h,whereas in control group rate was 19,38±0,72 mm/h (P<0,05). Decrease of hemoglobin and erythrocytes in posttraumatic period was revealed in all patients. This changes a certain way affect on activity adaptive systems of a body.

Results of nonspecific adaptive body response indicated presence of some clinical features (table 2). Phase "transition" (unstable reaction: "activation" and "training") in the main group (23,34±2,74%) was significantly higher than in control group in two days after operation, where figure was 8,45±2,07% (P<0,05). In maintime, the phase "stress" in the control group slightly decreased in comparative analysis (36,71±1,43%), whereas in the main group it greatly reduced – 25,64±2,65% (P<0,05).

More significant changes in indicators of adaptive systems of the body were observed in 14 days in thegroup with«Epsorin» then at the control. Phases "positive" (resistant reaction: "activation" and "training") of main group greater than 1,37 in group with standard treatment (P<0,05). More positive data had been identified in phase "stress"from a clinical point of view, where data of main group is 2,18 times lower compared to control (P<0,05).

Using «Epsorin» increased activity of adaptive systems of body and accompanied by absence of post-traumatic complications, whereas complications in control group were 6,69±3,05%. Our resultsshowed clinical efficacy of this adaptogen, and,in our opinion, this is due to action of vitamins A, E, C, K and B complex, free amino acids and fraction of prostaglandins,which are part of «Epsorin».

Conclusion. Using "Epsorin" in complex treatment of mandibular fractures revealed qualitative changes of nonspecific adaptive response. A significant increase of positive phase and reduction of phase "stress" in comparison of control group were noticed. The increase of activity of adaptive systems in postoperative period and clinical effective of "Epsorin" in jaw trauma treatment was revealed.

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Table 1

Dynamics of nonspecific adaptive response in patients of studied groups (M±s)

Periodofstudy	Phases of nonspecific adaptive response	Group, %	
		Control (n=82)	«Epsorin» (n=47)
Onadmission	"Positive" (sustained response: "activation" and "training")	20,42±1,80	21,13±2,29
	"Transition" (unstable reaction: "activation" and "training")	22,44±1,75	21,89±2,55
	«Reactivation»	2,43±2,21	2,12±3,49
	«Stress»	54,71±1,02	54,86±1,61
In 2 daysaftersurgery	"Positive" (sustained response: "activation" and "training")	49,98±1,13	46,78±1,90
	"Transition" (unstable reaction: "activation" and "training")	8,45±2,07	23,34±2,74*
	«Reactivation»	4,86±2,15	4,24±3,42
	«Stress»	36,71±1,43	25,64±2,65*
In 14 daysaftersurgery	"Positive" (sustained response: "activation" and "training")	61,55±0,87	84,41±0,55**
	"Transition" (unstable reaction: "activation" and "training")	20,64±1,79	2,12±3,49**
	«Reactivation»	2,43±2,21	6,42±3,34
	«Stress»	15,38±1,91	7,05±3,32**

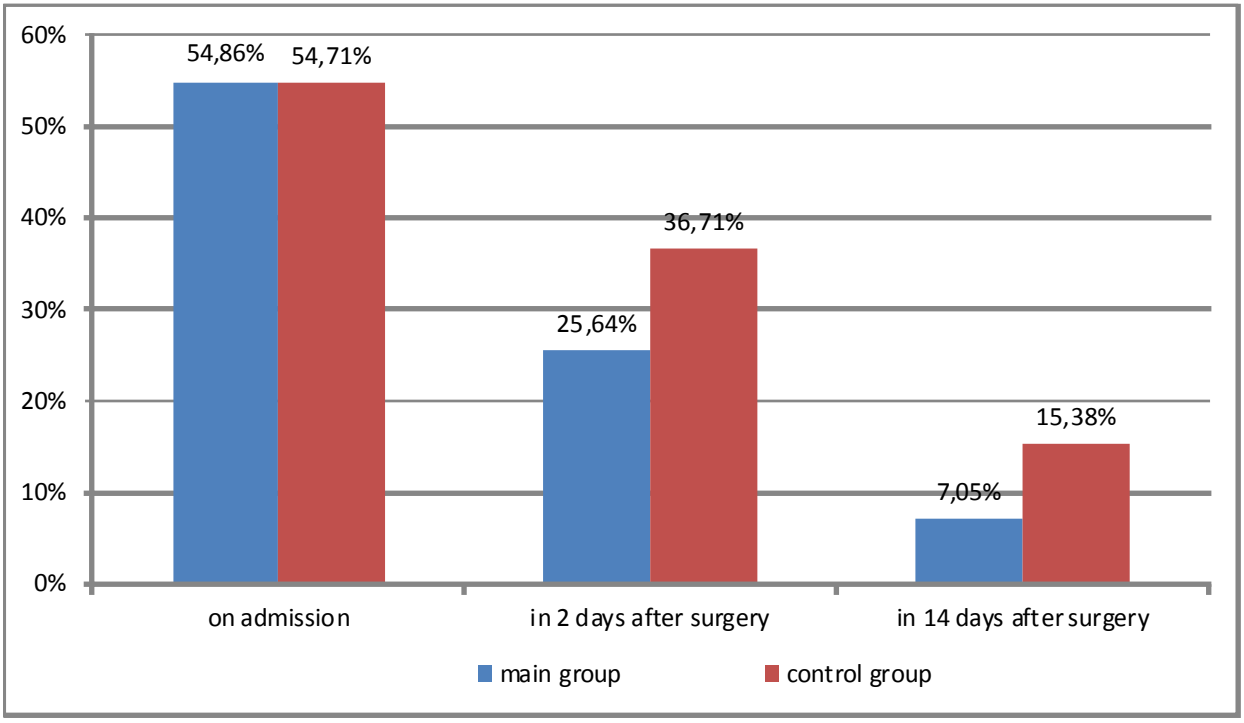
Note: * – significance of differences between two groups in 2 days after surgery; ** – significance of differences between two groups in 14 days after surgery. ($P < 0,05$).

Table 2

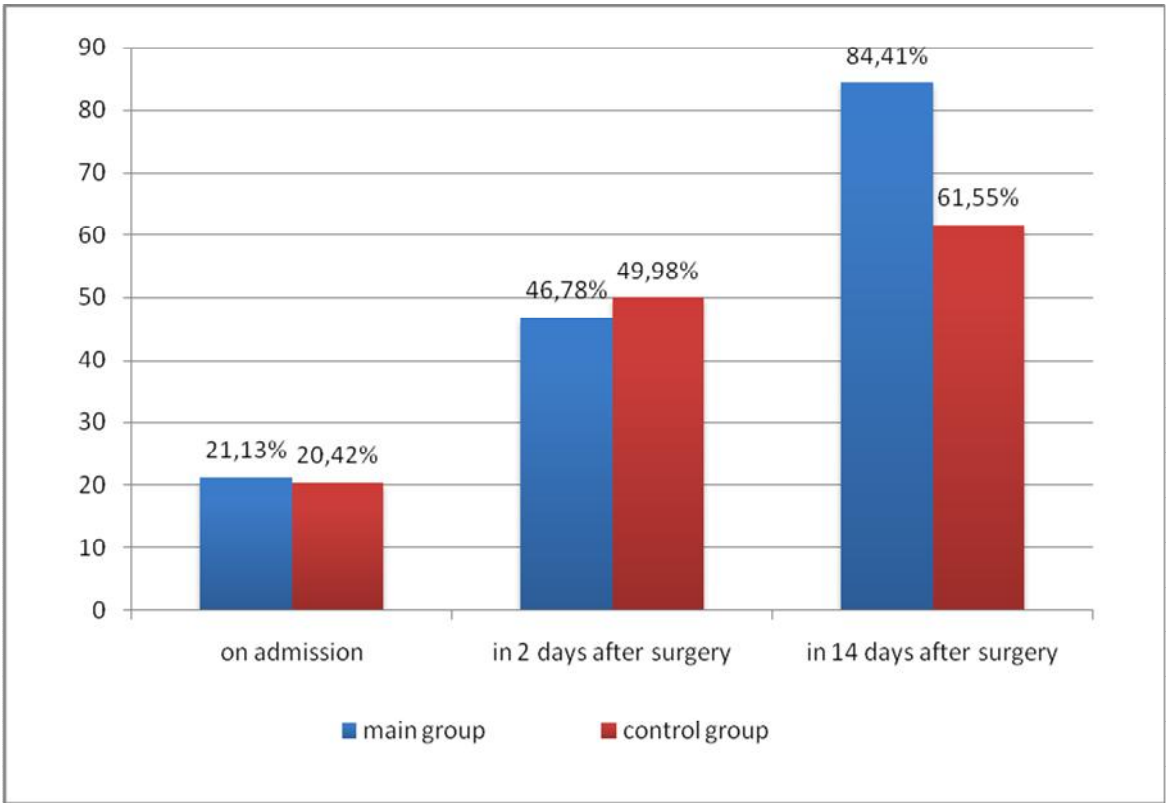
Dynamics of blood count indicators in patients of studied groups (M±s)

Indicator	Controlgroup (n=82)			Maingroup (n=47)		
	On admission	**In 2 daysaftersurgery**	**In 14 daysaftersurgery**	**On admission**	**In 2 daysaftersurgery**	**In 14 daysaftersurgery**
Erythrocytes,× 10^{12}/л	4,61±0,05	4,41±0,04	4,20±0,04	4,71±1,44	4,11±0,03*	4,56±0,05**
Hemoglobin, г/л	143,35±1,20	143,06±1,04	137,32±1,22	145,91±1,21	131,92±1,51*	147,82±1,47**
Leukocytes, × 10^{9}/л	10,45±0,36	9,25±0,15	6,38±0,06	12,14±0,44	8,28±0,31*	7,65±0,15**
Stab neutrophil, %	4,36±0,27	1,99±0,17	1,91±0,06	4,26±0,45	1,57±0,13*	1,10±0,09**
Neutrophils, %	69,21±0,63	64,42±0,77	57,31±0,65	69,82±1,37	62,42±0,85*	67,41±0,95**
Eosinophils, %	1,06±0,09	1,44±0,11	2,82±0,15	0,93±0,02	2,86±0,19*	3,64±0,19**
Lymphocytes, %	22,36±0,72	28,75±0,63	31,15±0,52	21,27±1,27	23,71±0,62*	20,27±0,91**
Monocytes, %	5,57±0,22	5,25±0,20	7,31±0,22	5,67±0,29	8,92±0,36*	7,09±0,36
ESR, mm/h	12,21±0,86	23,75±0,79	19,38±0,72	12,83±0,98	22,28±1,08	16,63±0,82**

Note: * – significance of differences between two groups in 2 days after surgery; ** – significance of differences between two groups in 14 days after surgery. ($P < 0,05$).



Picture 2. Dynamicof indicators phase "stress" in patients studied groups with mandibular fractures



Picture 2.Dynamic of indicators phases "positive response" in patients studied groups with mandibular fractures.