

Diagnostics and Treatment of Dorsalgia at the Military Servicemen of the Emergency Military Service

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ABSTRACT: 101 military servicemen with dorsalgia were examined. In military servicemens with dorsalgia of the first six months of service, the severity according to the VAS scale, vegetative dystonia syndrome (VDS) according to the questionnaire, as well as anxiety and depressive manifestations are more pronounced than in patients with the second six months of service, and is especially pronounced in the group of military personnel who had no desire to serve in the ranks of the Armed forces. In a study of the effectiveness of the combined drug (betamethasone, diclofenac and vitamin B12), the clinical efficacy of this drug in the treatment of acute lumbar vertebral pain in military servicemen was revealed.

KEYWORDS: military personnel, dorsalgia, back pain, autonomic nervous system, anxiety, depression, betamethasone, diclofenac, vitamin B12.

INTRODUCTION

Back pain is one of the urgent problems in medicine due to its high prevalence. During life, at least one episode of back pain is observed in 70-80% of the population, annually this disease affects more than 1/3 of the population [1, 2, 8]. In about 60% of cases, back pain has a so-called benign course and disappears within 2-3 weeks [6, 7, 8].

At the heart of autonomic disorders in the formation of vertebrogenic pathology are neuro-reflex changes caused by a disorder in the ratio of the sympathetic afferent and parasympathetic

efferent pathways with dysfunction of nonspecific brain formations (limbic-reticular complex) [3, 4, 5]. Despite the large number of methods for treating back pain [6, 7, 9, 10], up to 36% of treated patients continue to experience back pain of varying intensity [1, 2].

Optimizing the treatment of patients with acute back pain is an important and not yet fully resolved task. Recently, a combined drug (betamethasone, diclofenac and vitamin B12) has appeared in Uzbekistan, which has a pronounced anti-inflammatory, analgesic and neuroprotective effect. Dorsalgia, together with vegetative changes and depressive states in the military personnel of the armed forces of the Uzbek Army, are not yet sufficiently represented in the domestic literature.

Therefore, the **aim of the study** was to study the ratio of pain syndrome, autonomic changes and the level of anxiety and depression and to reveal the efficacy of a combined drug (betamethasone, diclofenac and vitamin B12) in the treatment of acute lumbar vertebrogenic pain in the military servicemen of the emergency military service (MSEMS).

MATERIALS AND METHODS

There were 101 MSEMS under our supervision, the average age of which was 19.5 ± 0.2 years. The patients were hospitalized in the neurological department of the Central Military Clinical Hospital of the Ministry of Defense of the Republic of Uzbekistan. All patients underwent general neurological examination, vertebro-neurological examination, and X-ray examination of the affected spine. The diagnostic process also included the patient's subjective assessment of pain using a visual analogue scale (VAS) - a 10-point pain intensity scale, a screening study of the level of anxiety and depression according to the Hospital Anxiety and Depression Scale (HADS). Higher scores indicated a more pronounced violation of these aspects of life. To identify disorders of the autonomic nervous system (ANS) was carried out using a standardized "Questionnaire to identify signs of autonomic changes", developed under the leadership of A.M. Wein (1991). The sum of the patient's scores on the questionnaire of more than 15 points was regarded as vegetative dystonia syndrome (VDS).

The patients were divided into two groups: group I consisted of the MSEMS of the first half of the military service (51 patients); Group II consisted of the MSEMS of the second half of the military service (50 patients). In these groups, the severity of pain syndrome, the level of anxiety and depression, and autonomic changes in dorsalgia were studied.

To determine the efficacy of the combined drug (betamethasone, diclofenac and vitamin B12) in the treatment of acute lumbar vertebral pain in MSEMS, these patients were divided into two groups: the main group (61 patients) and the control group (40 patients). In the control group,

standard medications and non-medications were used (NSAIDs, blockade with local anesthetics, physical therapy methods, massage), and in the main group, a combined preparation (betamethasone, diclofenac and vitamin B12) was used for 5 days, as well as physiotherapy and massage.

The effectiveness of the treatment was assessed according to the following criteria: 1) the intensity of the pain syndrome according to the visual analogue scale (VAS - 10 points); 2) muscular-tonic manifestations; 3) range of motion in the spine, 4) data from ENMG results.

The severity of muscle-tonic syndrome (MTS) was determined by calculating the index of muscle syndrome (IMS):

1) the severity of spontaneous pain: 1 point - no pain at rest, appears during exercise; 2 points - pain is insignificant at rest, aggravated by movement; 3 points - pain at rest, disturbed sleep, forced posture;

2) muscle tone: 1 point - the finger easily sinks into the muscle; 2 points - a certain effort is required to dive; 3 points - stone density muscle;

3) muscle soreness: 1 point - on palpation, the patient speaks of pain; 2 points - response to palpation with a mimic reaction; 3 points - response with general motor reaction;

4) duration of pain: 1 point - pain stops immediately; 2 points - lasts up to 1 minute; 3 points - lasts more than 1 minute;

5) the degree of pain irradiation on palpation: 1 point - pain is localized at the site of palpation; 2 points - pain extends to nearby tissues; 3 points - pain spreads to distant areas.

IMS is assessed by the sum of the points of the named signs: I degree (mild) - IMS up to 5 points; II (medium, moderate) - from 5 to 12 points; III (severe, pronounced) - more than 12 points.

The range of motion in the affected segment was assessed on a 4-patient scale (0 - the range of movements is not limited, 1 point - mild limitation, 2 points - moderately limited, 3 points - severely limited).

The task of the electrophysiological examination was to assess the severity of damage to the neuromotor apparatus with an assessment of the motor and sensory portions of the spinal root. The study was carried out on a 4-channel computer electroneuromyograph ("Neuro-EMG-4" by "Neurosoft").

RESULTS

In the study of dorsalgia in MSEMS, pain reflex syndromes of the lumbar level (lumbodynia, lumbar ischialgia) were most common - in 55 patients; pain syndromes of the cervical collar region (cervicalgia, cervicocranialgia, cervicobrachialgia) were detected in 33

patients, the posterolateral surface of the chest (thoracalgia) - in 13 patients. The onset of pain syndrome was most often associated with forced simultaneous weight lifting, prolonged physical exertion, household or sports injury. The assessment of pain syndrome in patients was carried out according to the VAS and amounted to 5.0 ± 1.4 points.

The examination revealed the presence of pain syndrome in patients of groups I and II, which, according to the VAS scale, was more pronounced in patients of group I (Table 1). When examining the ANS according to the ANS questionnaire, the presence of autonomic changes according to the questionnaire was revealed in all patients with dorsalgia, and in patients of group I these values were significantly higher ($p < 0.001$) than in patients in group II (Table 1). Based on the data of the HADS scale, it was revealed that patients of group I showed signs of clinically pronounced anxiety (11.2 ± 0.5 points) and subclinical depression (9.2 ± 0.4 points), and in patients of group II - subclinical and normal values of anxiety (5.8 ± 0.4 points) and the absence of depression (6.2 ± 0.5 points). Comparative indicators of anxiety and depression in group I patients were significantly higher ($p < 0.001$) (Table 1). Moreover, the maximum severity of depressive manifestations was noted in patients with a lack of desire to serve in the ranks of the Armed Forces.

On the basis of our data, it can be concluded that the MSEMS of the first six months of service is in the process of getting used to new psychosocial conditions and physical activity, on the one hand, and the lack of close communication with relatives and friends, on the other, cause the tension of the autonomic nervous system and the appearance of anxiety. Against this background, the pain syndrome in patients with dorsalgia is felt more pronounced with the development of mild depressive changes. In the process of service with the MSEMS of the second half of the service, the process of adaptation to new psychosocial conditions and physical stress is already taking place, as a result of which the pain syndrome with dorsalgia by patients is felt less pronounced.

The next stage of our study was to evaluate the efficacy of a combined drug (betamethasone, diclofenac, and vitamin B12) in the treatment of acute lumbar vertebral pain in MSEMS. The pain syndrome in patients on the VAS scale before treatment was in the range of 5 points and did not differ statistically significantly in the study and control groups. The range of motion in the lumbar spine and IMS before treatment in the main and control groups was also comparable and amounted to 2.5 and 12.5 points, respectively (Table 2).

The ENMG study made it possible to objectively establish the presence of a reflex increase in tone in the paravertebral muscles caused by painful afferentation from the affected spinal motion segments. For this, the speed of the impulse conduction in m/s was investigated by

sensory (n.peroneus superficialis) and motor (n.peroneus) fibers of the lower extremities in the main and control groups before treatment, which, as can be seen from Table 2, were reduced in the main and control groups and did not differ significantly from each other (Table 2).

As a result of the treatment, the pain syndrome was arrested in the main group on average within 5.8 ± 0.3 days, while in the control group it took 8.0 ± 0.4 days ($p < 0.05$). The severity of pain in the main group after treatment was significantly ($p < 0.05$) better than in the control group (Table 2). The achieved therapeutic effect was characterized by the complete elimination of spontaneous pain in the lumbosacral region in patients of the main group. A statistically significant decrease in the severity of IMS was found in both the main and control groups (Table 2). However, the severity of IMS after treatment was significantly lower in the study main group compared to that in the control group ($p < 0.05$).

The course of therapy also contributed to a decrease in the limitation of movements in the lumbar spine with a tendency to significant ($p < 0.05$) positive dynamics in the main group compared with the control group (Table 2). According to the ENMG study, both in the main and in the control ENMG groups, the data improved, however, in the main group, these data were significantly ($p < 0.05$) better than in the control group (Table 2).

Thus, the use of a combined drug (betamethasone, diclofenac and vitamin B12) made it possible to obtain a significant therapeutic effect in the treatment of MSEMS with acute lumbar vertebrogenic pain. It was characterized by a complete elimination of pain in the lumbosacral region, a radical decrease in muscle spasm and leveling of the curvature of the spinal column in the lumbar region. Compared with standard therapy, the result of treatment when using the combined drug (betamethasone, diclofenac and vitamin B12) was distinguished by a large decrease in clinical manifestations: vertebral pain, stiffness and tension of the paravertebral muscles, as well as ENMG indicators. Moreover, clinical and paraclinical improvements were achieved for a shorter course of treatment, which is of no small importance in restoring the health of conscripts and returning them to duty. It should also be noted that the drug we propose for the treatment of acute vertebrogenic pain, in comparison with standard therapy, is simple and available for use by military doctors.

CONCLUSIONS

1. In the military servicemen of the emergency military service with dorsalgia of the first six months of service, the severity according to the VAS scale, vegetative dystonia syndrome according to the questionnaire, as well as anxious and depressive manifestations are more pronounced than in patients with the second six months of service, and is especially pronounced in the group of military the ranks of the Armed Forces.

2. The data obtained revealed the clinical efficacy of the combined preparation (betamethasone, diclofenac and vitamin B12) in the treatment of acute lumbar vertebral pain in the military servicemen of the emergency military service.

3. The use of a combined drug (betamethasone, diclofenac and vitamin B12) in the treatment of acute lumbar vertebral pain reduces the recovery time by more than 2 days, which is of no small importance in restoring the health of the military servicemen of the emergency military service and returning them to service.

Table 1
Indicators of pain syndrome, level of anxiety, depression and autonomic changes in groups

data	I group	II group
VAS	5,2±1,4*	4,8±1,3
HADS level of anxiety	11,2±0,5*	5,8±0,4
HADS level of depression	9,2±0,4*	6,2±0,5
ANS questionnaire	25,1±1,1*	20,0±1,0

note: *-p<0,001

Table 2
Some clinical and paraclinical data in the examined patients in the dynamics of treatment

data	main group		control group	
	before treatment	after treatment	before treatment	after treatment
The intensity of pain when moving along the VAS	5,1±0,2	0,3±0,1#*	4,9±0,3	2,7±0,3
Range of motion in the affected spinal motion segment	2,5±0,2	0,5±0,1#*	2,5±0,3	1,5±0,2
index of muscle syndrome	12,5± 0,2	1,0±0,2 #*	12,5± 0,2	4,8±0,2
Impulse conduction speed, sensory nerves (n.peroneus superficialis), m/s	23,8±3,7	56,3±4,7##*	22,4±5,7	42,2±4,6
Impulse conduction speed, motor nerves (n.peroneus), m/s	28,1±3,5	40,2±3,1#*	27,7±4,7	37,6±4,5

note: # - reliability > 0.001 between the data of the main group before and after treatment;

*- reliability > 0.05 between the data of the main and control groups after treatment.

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