Abstract
The aim - to develop a model for predicting the formation of borderline mental disorders (BMD) in combatants.
The results of an experimental psychological study on the basic scales of the Standardized Multifactorial Method of Personality Research (SMMP) of 643 male combatants were analyzed. All respondents were divided into two groups by level of mental health: Group I - 338 people-healthy employees, Group II gr. - 305 persons, where there is a history of BMD were detected that arose after participating in the fighting. Analysis of premorbid profile of SMMP respondents Group II described an excitable type of personality with straightforwardness, categorical, perseveration, perseveration, lack of flexibility in behavior, with a gradual accumulation of discontent, which is manifested by an explosion of affect and aggression. On the basis of the basic scales of SMMP, the equations of the forecast of formation of BMD at combatants were developed. It is shown that the accuracy of the prediction of the formation of BMD in combatants only on the basis of indicators of SMMP scales is 77.0%, therefore, to improve the accuracy, it is necessary to develop a comprehensive diagnostic model, including psychosocial factors of anamnesis, taking into account the conditions of development and formation of personality.

Keywords: Combatants; Borderline mental disorders; Assessment the possibility of prediction; Standardized multi-factor method of personality research

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Introduction

The growing number of armed conflicts in the world dictates the need to improve approaches to psycho-prevention, diagnosis and therapy of borderline mental disorders (BMD) in combatants [2]. After performance of official tasks in extreme conditions at combatants' mental disorders (from pre-painful affective violations to psychopathy with accompanying dependences) which lead to decrease in social functioning, and in part of cases to social maladjustment with dangerous consequences for society are formed [3].

One of the urgent problems of military psychiatry is the development of comprehensive programs of medical and psychological support for persons whose service is associated with extreme conditions of professional activity [1]. Timely allocation of "risk groups" in the process of professional selection and medical and psychological support of personnel with the development of scientifically based comprehensive programs of diagnosis, therapy, rehabilitation, re-socialization, will minimize the negative psychosocial consequences for both combatants and society as a whole [5].

The analysis of BMD premorbid period, the conceptual expansion of the diagnostic boundaries of mental disorders by identifying pre-painful changes contributes not only to early diagnosis and timely identification of "risk groups", but also to the development of optimal methods of professional selection and timely correction of BMD in persons of dangerous professions in the pre-manifest period [6].

The aim of the research - to develop a model for predicting the formation of BMD in combatants.

Materials and Methods

The results of experimental psychological examination using the Standardized Multifactorial Method of Personality Research (SMMP) (Russian modification of MMPI [1]) in 643 male combatants are analyzed. All combatants were divided into two groups according to mental health level: I - 338 people -healthy employees (average age of 35.3±1.2 y.o.), II - 305 persons, where there is a history of BMD were detected, occurred after participation in hostilities (average age of 35.2±1.3 y.o.). Statistical processing of the results was carried out using the Kruskal-Wallis criterion and multiple logistic regression analysis with the method of forced input of variables.

Results and Discussion

In the survey of two groups of combatants on SMMP indicators scales "L", "F", " K " testified to the reliability of the test. Analysis of the personal SMMP profile showed significantly higher average rates in combatants’ group I in the following scales: neurotic over-control of pessimism, impulsivity, individualism and significantly lower emotional lability and anxiety. The other basic SMIL scales had no significant differences between the groups (Table 1).

Analysis of the results of the SMMP profile in respondents of Group II described an excitable type of personality with straightforwardness, categorical, perseverance, perseverance, lack of flexibility in behavior, the risk of antisocial behavior. It is known that against the background of premorbid excitable character traits, gradually there is an accumulation of discontent, which is manifested by an explosion of affect and aggression [4]. In some studies, it is noted that the study of the dynamics of personal characteristics of combatants after participation in hostilities reduces the number of employees with low values (35-40 T-points) of the anxiety scale by 8 times: before the trip -
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44.7%, and after-only 5.3% remained [6]. Combatants with a high level of optimism are prone to maladaptive behaviors, including excessive alcohol consumption [8]. Thus, premorbid personality traits are sharpened in the process of service, can contribute to the formation of BMD.

| Table 1: Personal SMMP combatants’ profile upon entry into service, Me (Q1-Q3), T - points |
|----------------------------------|----------------------------------|------------------|
| SMMP scales                      | Groups, Me (Q1-Q3)               | p-level *        |
|                                 | Group I n=338                    | Group II rp. n=305 |
| L                                | 47.0 (37.0-55.0)                 | 46.0 (37.0-55.0)  | 0.116 |
| F                                | 47.0 (39.0-53.0)                 | 41.0 (34.0-47.0)  | <0.001 |
| K                                | 53.5 (49.0-62.0)                 | 52.0 (43.0-57.0)  | 0.581 |
| Neurotic over-control            | 55.0 (50.0-63.0)                 | 52.0 (50.0-59.0)  | <0.001 |
| Pessimism                        | 67.0 (57.0-74.0)                 | 51.0 (48.0-78.0)  | <0.001 |
| Emotional lability               | 50.0 (45.0-55.0)                 | 53.0 (49.0-58.0)  | <0.001 |
| Impetuosity                      | 63.0 (56.0-78.0)                 | 61.0 (56.0-68.0)  | <0.001 |
| Masculinity                      | 56.0 (47.0-69.0)                 | 45.0 (34.0-53.0)  | <0.001 |
| R rigidity                       | 51.0 (44.0-68.0)                 | 52.0 (41.0-67.0)  | 0.453 |
| Anxiety                          | 56.0 (52.0-67.0)                 | 58.0 (54.0-76.5)  | <0.001 |
| Individualism                    | 56.0 (50.0-62.0)                 | 50.0 (44.0-56.0)  | <0.001 |
| Bullishness                      | 58.0 (45.0-48.0)                 | 44.0 (34.0-52.0)  | <0.045 |
| Social introversion              | 68.0 (63.0-78.0)                 | 69.0 (52.5-78.0)  | <0.001 |

Note: * p was calculated using the Kruskal-Wallis criterion, the critical level of statistical significance in the case of pairwise comparison was p≤0.017

To create a model for predicting the formation of BMD in combatants, we analyzed the values of SMMP profile T scores in mentally healthy and combatants with BMD. The method of forced input of variables was used for the calculation, the forecast model was determined as statistically reliable at \( \chi^2=298.9 \) (p<0.001); -2 LL=590.8; Nagelkerke R2=0.496. In table 2 for each SMMP scale, the odds ratios (OR) are given, taking into account the correction of the influence of other features included in the regression model.

| Table 2: Independent prognostic signs of BMD development in combatants. |
|----------------------------------|------------------|------------------|
| SMMP scales                      | OR               | 95% DI           |
| Neurotic over-control            | 0.990            | 0.972-1.008      |
| Pessimism                        | 0.975            | 0.961-0.989      |
| Emotional lability               | 1.070            | 1.046-1.096      |
| Impetuosity                      | 0.974            | 0.957-0.991      |
| Masculinity                      | 0.921            | 0.905-0.937      |
| Rigidity                         | 0.994            | 0.980-1.008      |
| Anxiety                          | 1.036            | 1.018-1.055      |
| Individualism                    | 0.943            | 0.925-0.960      |
| Bullishness                      | 1.039            | 1.020-1.059      |
| Social introversion              | 0.978            | 0.963-0.003      |

Note: * OR adjusted to account for the influence of other scales in multiple logistic regression analysis.
The regression coefficients and the level of statistical significance of each of the SMIL scales are presented in Table 3.

Table 3: Regression coefficients for independent prognostic signs of BMD formation in combatants.

| SMMP scales          | Code | B¹     | Wald statistic value | p-level |
|----------------------|------|--------|----------------------|---------|
| Neurotic over-control| X1   | -0.010 | 1.19                 | 0.274   |
| Pessimism            | X2   | -0.025 | 11.7                | 0.001   |
| Emotional lability   | X3   | 0.068  | 32.4               | <0.001  |
| Impetuosity          | X4   | -0.027 | 9.18                | 0.002   |
| Masculinity          | X5   | -0.082 | 88.6               | <0.001  |
| Rigidity             | X6   | -0.006 | 0.67                | 0.414   |
| Anxiety              | X7   | 0.035  | 15.1                | <0.001  |
| Individualism        | X8   | -0.059 | 38.6               | <0.001  |
| Bullishness          | X9   | 0.039  | 15.7               | <0.001  |
| Social introversion  | X0   | -0.022 | 8.32               | 0.004   |
| Constant             |      | 5.513  |                     |         |

Note: ¹ – the coefficient of the regression model.

On the basis of the calculated regression coefficients and the values of weighted OR for all signs, it was revealed that masculinity, individualism, emotional lability are the most significant scales of SMMP, forming BMD in combatants, next in importance are optimism, anxiety, pessimism, impulsivity, social introversion and, finally, neurotic over-control and rigidity.

The calculated model is as follows:

$$P(\hat{y}) = \frac{1}{1 + e^{-y}}$$

where $y = 5.513 - 0.010 \times X1 - 0.025 \times X2 + 0.068 \times X3 + 0.027 \times X4 + 0.082 \times X5 + 0.006 \times X6 + 0.035 \times X7 + 0.059 \times X8 + 0.039 \times X9 + 0.022 \times X0$.

$P(\hat{y})$ – the probability of BMD formation (0≤$\hat{y}$≤1).

The result close to "1", speaks about the increased probability of formation of BMD, and to" 0 " - about low probability.

When inspecting combatants before being sent on missions to areas with special conditions of service, it is advisable to consider a BMD risk index greater than 0.9.

Conclusion

Development of the forecast of formation of BMD at combatants is carried out with use of the synthesized logistic model and a point of division of forces. The use of the model is possible repeatedly taking into account the number of trips to the "hot spots". At the same time, the accuracy of forecasting the risk of PPR formation in combatants using this model was 77.0%. Given the low level of prediction accuracy, it can be concluded that the use of SMMP scales alone cannot predict the formation of BMD in combatants. It is necessary to develop a complex model of prognosis taking into account personal characteristics and psychosocial factors as a kind of markers of professional success of persons of extreme activity profile.

References

1. Ichitovkina EG, Zlokazova MV, Soloviev AG. 2017. System monitoring of mental health of combatants-police officers: monograph. Arkhangelsk: Publishing
House of the Northern State Medical University. 205.

2. Marchenko AA, Goncharenko AYu, Krasnov AA, et al. 2015. Features of diagnostics of neurotic disorders in servicemen. Bulletin of the Russian Military Medical Academy. 1: 48-53.

3. Rodygina YuK., Deryagina LE, Soloviev AG. 2005. Psychophysiological markers of professional success of employees of divisions of Internal Affairs Bodies. Human Ecology. 10: 33-38.

4. Sobchik LN. 2001. Introduction to the psychology of individuality. - Moscow: Publishing House of Applied Psychology. 512.

5. Soloviev AG, Shutova AA, Zlokazova MV, et al. 2017. Dynamics of formation of mental disorders in combatants-pensioners of the Ministry of Internal Affairs. Advances in Gerontology. 6: 912-916.

6. Strelnikova Yu. 2014. Dynamics of the mental state and changes in the personality of combatants within 1 year after participation in the counter-terrorist operation. Biomedical and socio-psychological problems of security in emergency situations. 2: 74-83.

7. Fisun AYa, Shamrey VK, Marchenko AA, et al. 2013. Ways of prevention of addictive disorders in the military. Military Medical J. 9: 4-10.

8. Długosz LJ, Hocter WJ, Kaiser KS, et al. 1999. Risk factors for mental disorder hospitalization after the Persian Gulf War U. S. Armed Forces, June 1, 1991-September 30, 1993. J Clin Epidemiol. 12: 1267–1278. Ref.: https://bit.ly/346oEVa