

## CLINICAL ASPECT OF NAVAL CREWS COMBAT STRESS

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### ABSTRACT

Stress among naval mariners is caused by a new environment in the form of climate, noise, defective food, diseases or injuries, and others. Stress is aggravated by the lack of information, conflicts between mariners, changing decisions of superiors. The strongest stressor military action is the fear of losing life or health.

The stress leads to disturbances in the neuronal transmission and reduction in CNS cells, weakening the processes of neurogenesis. Its complications are a social problem for soldiers returning from humanitarian and military missions and their families.

Mariners cope with stress individually in the area of operations of the armed forces. When difficult situations overwhelm the possibility of compensating psyche, there are algorithms for psychological support. The basis for coping with stress is permanent, social support. The next level concerns support group sessions, involving soldiers after a traumatic event or completing a task. Sessions take place in a quiet place, after the cessation of activities. We are talking about defusing and debriefing technique. The highest level of coping with stress refers to psychotherapy. At first, in the field conditions, and then in the form of hospitalization in the country. Clinical forms of combat stress is post-traumatic stress disorder, acute stress syndrome, personality change as a result of the disaster experience, dissociative disorders, operational fatigue, DESNOS. The treatment of these disorders involves cognitive behavioral oriented trauma therapy and medical therapy with the use of SSRIs, SNRIs, and antipsychotics.

In the twenty-first century a inquiry into combat stress creates a tight prevention of its complications.

**Key words:** combat stress, posttraumatic stress disorders, acute stress syndrome, operational fatigue, coping with stress.

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## INTRODUCTION

Combat Stress is defined as a normal reaction to an abnormal situation. Its complications are a social problem, concerning the returning sailors with humanitarian missions and military and their families. The nature and the difficult conditions of service in a combat zone guarantee of its occurrence and increase the risk of its complications. Constant threat puts pressure on the soldiers, which affects their health, ability to fight and functioning after returning to the country. Concept of stress is defined specific human behavior in an emergency situation. It is a state of general mobilization in response to the strong stimulus.

## HISTORICAL EVOLUTION CONCEPT

Combat Stress: The foundations for the concepts of combat stress were laid in the seventeenth century. The concept of nostalgia emerged to express the idea of one's collapse on a battlefield.

The original name for this phenomenon is the "Swiss disease", which comes from the forced recruitment of Swiss peasants into a rogue army. It involved immature young men who, having lost all hope of returning to their homes and having to confront their own mortality, experienced cognitive changes.

In 1871, J.M. Da Costa described this condition as cardiac neurosis. The symptoms are shortness of breath, sweating, nausea, diarrhea, dull chest pain and persistent tachycardia. He described the discomfort occurring in soldiers who fought in the Civil War.

Decades later, during World War I, the term "shell shock" began to be used, which was later replaced by the name of "war neurosis". It included an increased or depressed mood, agitation, exhaustion, anxiety and loss of concentration. And during the Second World War, a popular notion was that of a battle fatigue. It was linked to four factors, and the diagnosis was usually based on one of them: sudden exposure, cumulative exposure, physical stressors and problems in the location they were deployed to.

The symptoms were similar to those of shellshock and cardiac neurosis expanded to include anxiety, depression, disorders, physical functioning and loss of motivation, concentration and memory. Today, one of the most common mental health disorders following military missions is posttraumatic stress disorder. It is a disorder reported in American veterans of the Vietnam War.

In 1983, the US Congress commissioned a nationwide study of this phenomenon. It was to determine the incidence of the condition among returning veterans. It was shown that 30% of men and 26% of women suffered from PTSD.

Research on PTSD during successive military missions has allowed the improvement of methods of treatment. Recently, the term of operational stress response has been coined. Its task is to distinguish between combat stress during wartime mission and stress during peacekeeping operations [1].

## FACTORS AND MECHANISM OF COMBAT STRESS

The strongest stressor on the battlefield is the fear of death or disability, a sensation aggravated by the hideous violations of human rights seen, for example, in the cruelty of opponents. This stress is compounded by being present in unfamiliar climates and noises, enduring bad food, diseases, monotony, rocking, tilting or injury, and others. Stress is aggravated by a lack of information, conflicts within the crew and changing decisions by superiors.

However, these factors only partly reflect the impact of war on people. Origin, culture, traditions from which the sailor or service person originated have great importance. Individual beliefs are filtered by fight stressors. Participation in an armed conflict results in soldiers treating the situation as a test of their courage, competence and strength. Crewmen are typically reluctant to admit to symptoms of stress or anxiety, because they are afraid of being labeled as cowards [2].

The concept of stress is defined as a specific human behaviour in an emergency situation. It applies to all non-specific effects of different factors. Symptoms of stress, caused by specific factors are defined as "general adaptation syndrome" (Selye).

It runs in three phases. The first phase – the alarm phase, manifests when the defense mechanisms disclose a lowered immunity and as an increase in the excitability of the autonomic nervous system. The second phase is the stage of resistance when we adapt to stressors and the symptoms begin to fade. However, these may be only superficial phenomena constituting two antagonistic mechanisms of maintaining the body in balance. If the compensatory reactions expand, severe stress factors can in response lead to an exhaustion phase. This leads to the exhaustion of adaptive reaction resources [3].

High levels of stress increase mental tension that stimulates the autonomic nervous system and can be the cause of sleep disorders. Additionally, sailors and service personnel may experience nightmares, which are especially common in people who have experienced a traumatic event. Their survival is one of the diagnostic criteria for PTSD.

Sleep disorders are also aggravated by physical fatigue. Increasing sleep problems worsen the perception, hinder rest, and are conducive to alcohol and drug abuse. Insomnia occurring after a mental injury blocks the healing process [4,5,6].

The stress leads to disturbances in the neural transmission. The mechanism is similar to depression. It leads to a reduction of CNS cells and consequently weakens the processes of neurogenesis.

This is contained in Stahl's hypothesis on transmitting receptors (2000), which tells of the depletion of neurotransmitters as a result of insufficient rest as well as their regulation. It was found that prolonged exposure to stress predisposes individuals to anxiety disorders and depression due to the depletion of stocks of neurotransmitters [7,8].

## COMPLICATED TYPES OF COMBAT STRESS

Post-traumatic stress disorders develop in people who have experienced traumatic stress. The condition for the diagnosis of PTSD includes the re-experiencing of the trauma, emotional numbing and avoidance of stimuli associated with the traumatic

experience, and excessive stimulation. Compared with the general population, people with post-traumatic stress disorder are burdened with a significantly greater likelihood to attempt suicide [9].

To develop PTSD a patient must experience an event in which his life or safety of others were threatened or lost. The patient must experience intense fear, helplessness, horror, which they relive again once the event is over. Symptoms become apparent in the form of memories, nightmares, intrusive thoughts with a tendency to avoid them. The main cause of PTSD consists in high intensity fights and their duration [8,10].

Sailors and other service personnel who have experienced psychological trauma during a conflict have to return home to face the difficult task of confronting their memories and internal experiences with the absence of emotional tension and threats.

The situation in the home country, in their homes, is different from the war zone. The values that are important to them in the home are different than those they must consider in the combat zone. Amongst the returning crew members, there is a sense of guilt in relation to their colleagues who did not return from the mission they were assigned to.

Their mental state in the form of emotional blunting and aggression is destructive to their families and can cause secondary traumatization of spouses. Wives of men with PTSD symptoms often exhibit signs of somatization, depression, obsessive-compulsive disorder, paranoid thinking, interpersonal sensitivity and hostility. These marriages experience increased occurrences of separation and divorce [11].

Acute stress syndrome is a disorder that is often transient in nature, but occurs with considerable intensity. The condition appearing as a reaction to an exceptionally traumatic event, usually within 2 hours after the event (but can be up to 30 days), is characterized by a large variety of symptoms. In a person suffering from acute stress there is an observable initial "bewilderment", a narrowing of the field of consciousness and narrowing of attention, as well as an inability to understand the stimuli, disorientation.

Patients exclude themselves from the environment (in extreme cases they enter a stupor) or exhibit hyperactivity and agitation. Signs of panic and anxiety with physiological reactions become apparent. It is possible to encounter complete or partial amnesia, loss of sense of self identity – depersonalization. The person no longer feels like himself/herself, feels that he/she has changed. They may experience a sense of strangeness, perhaps even seeing some deformations in their own bodies [12].

Another disorder which soldiers can experience is the DESNOS syndrome. It is a mental trauma caused by multiple or long-term exposures to traumatic events, e.g. as a victim of violence. The diagnosis requires an occurrence of symptoms linked to six psychopathological disorders. These include the disorders of affect, attention and awareness, self-image, relationships with other people, somatization and cognitive impairment. This can manifest itself in soldiers who are held captive, repeatedly humiliated or tortured [10].

The consequence of such high-stress situations and long-term crisis can be permanent changes such as personality disorders. These disorders are listed in the International Classification of Diseases-10 (ICD-10) as personality changes resulting from experiencing

a disaster. They are diagnosed when before the stress event there had been no personality disorders and afterwards they persist for at least 2 years. Symptoms include manifestations of hostility, distrust, insecurity, tension, a tendency to react irritably, withdrawal from social interaction, alienation [13].

In the Diagnostic and Statistical Manual of Mental Disorders-IV (DSM-IV) a distinguished group of dissociative disorders is highlighted, such as amnesia, fugue, identity disorder, depersonalization and non-specific dissociative disorders. In dissociative disorder problems, bad memories or conflicts of a sailor are replaced by symptoms of a disease. This leads to an integration loss between their own identity, control of their own movements, impressions and memories. The symptoms are often constituted by the patient's image of a somatic disease. Dissociative disorders can enter remission after several weeks, especially if they had developed following a traumatic event [14].

The disadaptation syndrome is a result of a long lasting state of psychological tension caused by accumulation of stressogenic situations and the arising compensation difficulties. This occurs in stages. In the first phase the emotional disorders are at the border line between the norm and pathology. Next, they resemble the symptoms of neurosis or personality disorders. In the third phase the psychopathological symptoms accumulate as an expression of personality defense mechanisms. In the fourth and final stage, there occurs an immunity disorder accompanied by psychiatric and psychosomatic disorders.

The course of the disadaptation syndrome depends on individual characteristics. It may manifest itself as a deterioration in training results, negligence of one's duties, failure to comply with regulations, unruliness, alcohol abuse, aggressive behavior. Moreover, incidentally there are suicidal behaviors, however more frequently it is self-mutilation of a demonstrative character to draw the attention of one's environment to the existing problems [15].

Operational fatigue, formerly known as a battle exhaustion syndrome, is observed in sailors who have not so much experienced a great deal of fear for their lives or becoming injured as they have been burdened with huge long-term physical effort, emotional stress, concentration and alertness, lack of sleep. Operational fatigue occurs in three phases. In the first phase, the initial period, the symptoms are characteristic of emotional tension first manifested by sleep deficiency. This is followed by headaches, always occurring in the same location and having the character of compression.

The next phase, the period of psychic disorganization reveals psychomotor inhibitions in a crewman as well as anxiety and confusion. The psychological condition and behaviour cause the need to evacuate such an individual from the combat area. There are also observable somatic symptoms of stress. In the third phase, the period of utter psychic disorganization, the sailor becomes aggressive, anxious, confused. His statements are irrational, contradictory. He may experience conversion disorders [3].

## COPING WITH STRESS

The basis for coping with stress among sailors consists in natural-individual abilities. These are



unconscious processes, the acquired skills and habits of psychological compensation. These issues are amplified by social support, i.e.: a colleague, priest, commander. They take place anytime and anywhere. The next level of coping with stress refers to support group sessions gathering soldiers after completing a task or a traumatic event. Sessions take place in a quiet area, after the cessation of activities. What is meant is the defusing technique, a debriefing allowing for an element of releasing the participants' emotions. The highest level of coping with stress refers to psychotherapy. At first conducted in the field, and then in the form of hospitalization in the soldier's home country.

Defusion refers to a meeting prepared by superiors aimed at the relaxation of a tense situation. It is a method of psychological help consisting in releasing strong emotions and tensions caused by participation in particularly dramatic events. It should be carried out in a place nearby or in similar conditions to those of the incident and on the day of its occurrence.

The primary objectives are to overcome the effects of an experienced stress, restore the balance and the ability to proceed, and to conduct a mental (emotional) assessment of soldiers. The purpose is to prevent an occurrence of PTSD. These objectives are achieved through conversation in the group (section, team, subdivision, watch), which provides the way of expressing the accumulated stress and emotions (all of the reactions are normal responses to an abnormal situation) [16].

Debriefing is a systematic meeting organized after a military action, involving reconstruction of traumatic events. It should be held within 24-72 hours from the event and conducted by a psychologist or psychiatrist and several paramedics who are not members of the team. The aim is to recover from the emotions caused during military operations. This helps to reduce the negative impact on the psyche and return to balance. J. Mitchell's model of Critical Incident Stress Debriefing (CISD) includes a meeting consisting of seven stages.

The first stage is the introduction – Presenting the rules to be observed during the meeting. It is followed by the phase of the facts – participants describe the event. The third stage is the stage of thoughts – participants share their thoughts which appeared during the event. The next step is the phase of reactions – participants share their emotional reactions occurring in response to the event and the emotions that are active during the meeting.

The fifth stage is the phase of symptoms – a discussion of individual responses to stress. The sixth stage is the phase of learning – participants learn how to deal with stress. The last stage, the seventh is the conclusion – summary of the meeting where the participants are familiarised with other sources of assistance, should it be required.

The prevention of PTSD is conducted with the use of the model of crisis intervention proposed by Braverman. When sailors involved in a traumatic incident manifest typical reactions and symptoms, they should be provided with the possibility of obtaining emotional support and information.

In the base or outside it (e.g. on patrol, during an action) there might be various barriers preventing the soldiers' return to health, for instance, a loss of the existing ties among fellow soldiers, changes in the relationships with superiors, inability to express

emotions, fears and weaknesses. The model of crisis intervention is concerned with the joint action of the command, specialists with regard to mental injuries and people responsible for the health and safety of soldiers in the base. The model includes five components occurring successively.

The first element is crisis preparedness, i.e. implementation of the necessary pre-thought-out and planned activities immediately after the traumatic event. The second element is a consultation with the leadership that within twelve hours from event occurrence should take the decision to intervene, as well as determine the composition of a crisis team. Then, a meeting should be held with people exposed to a critical event. The fourth stage is an individual crisis counseling for those who need it. The last element concerns the evaluation of interventions and making recommendations for the future [17].

## TREATMENT

The treatment of these types of disorders involves application of psychotherapy and pharmacotherapy. Where it is not recommended to utilise the debriefing method in order to prevent further development of post-traumatic stress disorder, it is possible to initiate treatment with the use of propranolol, sertraline, as well as trauma-focused cognitive behavioural therapy (TF-CBT).

The first-line drugs are serotonin reuptake inhibitors (sertraline) or serotonin and noradrenaline reuptake inhibitors (venlafaxine). The main recommendation for psychotherapy is the TF-CBT or Eyeball movement desensitization (EMDR). The first effects of the therapy are observed after twelve weeks. People who experience improvement due to the applied pharmacotherapy should receive treatment for at least twelve months.

The concomitant use of medication and psychotherapy is recommended in the initial treatment period. In the case when the medication is ineffective an increased dose should be considered. Moreover, it is possible to switch to another drug with proven efficacy or use polypharmacotherapy including antipsychotics (olanzapine, risperidon). In the later periods of treatment combined pharmacological treatment with psychotherapy is recommended [18].

## SUMMARY

A common feature of the discussed conditions consists in a long-term experience of war horrors by sailors. Education of the armed forces in a matter of stress on the battlefield is aimed to raise their awareness. Early diagnosis of one's own or colleagues' symptoms of stress can reduce the risk of an occurrence of complications. It can be obtained by dealing with stress individually or during group sessions.

This can prevent a personal tragedy of a soldier connected with family difficulties, job loss, and expensive treatment. In addition this way the operational capacity of

Numerous studies and observations of complications related to combat stress provide a comprehensive overview of the discussed issues. The conclusions led to the creation of schemes to facilitate psychological mechanisms of coping with stress.

The armed forces provide seafarers with needed

psychological support. A professional soldier and his family may be referred to a designated facility where a psychologist is available. Moreover, after returning from a mission soldiers are assured a stay in the military sanatorium which offers them the opportunity to participate in group therapy sessions. If necessary, they may be directed for treatment to military psychiatric wards.

Combat stress is not only a military health care problem. This is an interdisciplinary issue the knowledge of which is used in the planning, tactics, logistics, combat effectiveness, helping oneself, colleagues and subordinates.

## BIBLIOGRAPHY

1. Moore B, Reger G: Stres bojowy i zespół do spraw kontroli stresu bojowego w perspektywie historycznej i współczesnej. w: Figley C, Nash W, Ilnicki S. Stres bojowy. Teorie, badania, profilaktyka, terapia. Warszawa, 2010, 188-193 ISBN 978-83-01-16310-5 [Combat stress and control team of combat stress in a historical and contemporary perspective];
2. Nash W Stresory Wojny. w: Figley C, Nash W, Ilnicki S. Stres bojowy. Teorie, badania, profilaktyka, terapia. Warsaw, publ. PWN, 2010, 20-22 ISBN 978-83-01-16310-5 [Stressors of war];
3. Gruszczyński W: Zdrowie Psychiczne w czasie wojny u żołnierzy. in: Florkowski A, Gruszczyński W. Zdrowie psychiczne żołnierzy. Łódź, Wojskowa Akademia Medyczna, 2000, 171-175. [Soldiers' mental health during the war];
4. Wichniak A: Praktyczne wskazówki dotyczące rozpoznawania i leczenia zaburzeń snu Poradnia Zaburzeń Snu, Ośrodek Medycyny Snu Instytutu Psychiatrii i Neurologii, Warsaw, Chest 2013. [Practical guidance on the diagnosis and treatment of sleep disorders];
5. Wichniak A: Zaburzenia snu. in: Jarema M. Psychiatria publ. PZWL, Warsaw, 2011, 301 ISBN 978-83-200-4180-4 [Sleep disturbances];
6. Ilnicki S, Przedmowa. w: Figley C, Nash W, Ilnicki S. Stres bojowy. Teorie, badania, profilaktyka, terapia. Warsaw, publ. PWN, 2010, XXII ISBN 978-83-01-16310-5 [Preface];
7. Rybakowski J: Choroby Afektywne. w: Jarema M. Psychiatria publ. PZWL, Warsaw, 2011, 176 ISBN 978-83-200-4180-4 [Affective diseases];
8. Nash W, Baker D: Konkurencyjne ze sobą i uzupełniające się modele stresu bojowego. in: Figley C, Nash W, Ilnicki S. Stres bojowy. Teorie, badania, profilaktyka, terapia. Warszawa, publ. PWN, 2010, 94-98 ISBN 978-83-01-16310-5 [Competing and complementing models of combat stress];
9. Baldwin D., Anderson I, D.J. Nutt, et al. Evidence-based pharmacological treatment of anxiety disorders, post-traumatic stress disorder and obsessive-compulsive disorder: a revision of the 2005 guidelines from the British Association for Psychopharmacology, Journal of Psychopharmacology, 2014; 28 (5): 403–439 DOI: 10.1177/0269881114525674;
10. Luxenberg T, Spinazzola J, van der Kolk B: Complex Trauma and Disorders of Extreme Stress;
11. (DESNOS) Diagnosis, Part One: Assessment, Directions in Psychiatry, 2011 DOI:10.3325/cmj.2011.52.505;
12. Lyons J: Powracający Wojownik: rady dla rodzin i przyjaciół. w: Figley C, Nash W, Ilnicki S. Stres bojowy. Teorie, badania, profilaktyka, terapia. Warsaw, publ. PWN, 2010, 357-369, ISBN 978-83-01-16310-5 [Returning warrior: advices for family and friends];
13. Sideris E, Paczuska-Jałowińska B: Bezpieczeństwo psychologiczne elementem spójnej polityki Zarządzania Kryzysowego. In: VII międzynarodowa konferencja naukowa „Zarządzanie Kryzysowe”, Olsztyn, Uniwersytet Warmińsko-Mazurski, 2008. www.uwm.edu.pl/mkzk/upload/referaty/24\_konf.\_olsztyn.doc [quoted on 2016-03-10] [Psychological safety as element of coherent policy for crisis management];
14. Aleksandrowicz J: Zaburzenia nerwicowe. In: Aleksandrowicz J, Psychopatologia zaburzeń nerwicowych i osobowości, Cracow, 2002, 153 ISBN 83-233-1529-9 [Neurotic disorders];
15. Aleksandrowicz J: Zaburzenia nerwicowe. In: Aleksandrowicz J, Psychopatologia zaburzeń nerwicowych i osobowości, Cracow, 2002, 83-86 ISBN 83-233-1529-9 [Neurotic disorders];
16. Kocur J: Zespoły dezadaptacyjne u żołnierzy – przyczyny, uwarunkowania, obraz kliniczny, diagnostyka i terapia, zasady postępowania orzeczniczego, psychoprofilaktyka. In: Florkowski A, Gruszczyński W. Zdrowie psychiczne żołnierzy. Łódź, Wojskowa Akademia Medyczna, 2000, 35-43. [Soldiers maladaptive syndromes – cause, conditions, clinical, diagnosis, therapy, certification, psychoprevention];
17. Nowak B: Stres bojowy .przyczyny, oznaki, zapobieganie. Materiał do zajęć z kształcenia obywatelskiego, Ministerstwo obrony narodowej, Departament wychowania i promocji obronności, Warsaw, 2008, www.wojsko-polskie.pl/pl/f/dl.../Stres%20bojowy%20-%20konspekt.pdf, quoted on [2016-03-15] [ Combat stress. Cause, syndromes, prevention];
18. Radko J: Wtórny zespół stresu pourazowego w pracy strażaków i pracowników pogotowia ratunkowego – przegląd badań, Szczecin, Opuscula sociologica nr 3 [5] 2013 [ Firemen's and paramedics' secondary posttraumatic stress disorders];
19. Baldwin D., Anderson I, D.J. Nutt, et al. Evidence-based pharmacological treatment of anxiety disorders, post-traumatic stress disorder and obsessive-compulsive disorder: a revision of the 2005 guidelines from the British Association for Psychopharmacology, Journal of Psychopharmacology, 2014; 28 (5): 403–439 DOI: 10.1177/0269881114525674.

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