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Treatment of men injured in combat operations (combat trauma) with various forms of erectile dysfunction

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Combat injuries mostly cause post-traumatic stress disorder, which is accompanied by erectile dysfunction (ED), decreased sexual desire, premature ejaculation, etc. Neurotic mental disorders, blood vessel diseases, metabolic disorders, and partial androgen deficiency take precedence among the many pathological conditions preceding or complicating ED, especially for combatants.
The objective: **optimization of treatment of psychogenic and mixed forms of ED in men with combat injuries.**
Materials and methods**. The study included the results of the examination and treatment of 136 men aged 20–53, participants in combat operations with combat injuries, with sexual dysfunction and ED as the main complaint. According to the form of ED, patients were divided into two groups: Group 1 – patients with psychogenic ED after a combat injury (n = 84); Group 2 – patients with ED of mixed genesis, included patients, participants in hostilities with endothelial dysfunction, metabolic syndrome, coronary heart disease, late hypogonadism (n = 52). The treatment of all patients with sexual dysfunction was carried out individually, depending on the etiopathogenesis of the main diseases and the combat trauma that led to it, as well as the development and course of the leading sexological syndromes, taking into account standardized protocols that allowed dividing patients by identity into groups and carrying our significant statistical calculations.**
Results**. It was shown that the treatment of men with psychogenic ED, which includes lifestyle modification, rational and explanatory psychotherapy, as well as the use of a PDE-5 inhibitor, such as sildenafil, leads to an increase in the mean IIEF-5 score from 10.8 ± 0.9 (severe form of ED) to 19.6 ± 1.7 (mild form of ED) ($p < 0.05$). It is also advisable to use alpha-adrenoblockers that act on both peripheral and central adrenoceptors. In the treatment of patients with ED of mixed genesis, the best results are observed when androgen replacement therapy is performed with proven androgen deficiency; taking lipid-lowering therapy for persistent dyslipidemia; withdrawal of β-blocker, in cases where it is possible; changing the patient's harmful lifestyle; conducting rational and clarifying psychotherapy and its potentiation by taking sildenafil. Such treatment leads to an increase in the average IIEF-5 score from 11.5 ± 0.9 (moderate form of ED) to 17.8 ± 1.6 (mild form of ED) ($p < 0.05$).**
Conclusions**. The disorders of general and mental health, role functioning at the physical and emotional levels are the main disorders health-related quality of life with psychogenic ED. Lifestyle modification, along with rational and explanatory psychotherapy, as well as the use of the PDE-5 inhibitor sildenafil, gives positive results. Patients with ED of mixed genesis have impaired general and mental health, physical and emotional functioning, and vital activity. The best treatment results are observed when androgen replacement therapy is carried out with proven androgen deficiency; taking lipid-lowering therapy for persistent dyslipidemia; withdrawal of β-blocker, in cases where it is possible; changing the patient's harmful lifestyle; carrying out rational and clarifying psychotherapy and its potentiation by taking sildenafil.**
Keywords: *combat trauma, erectile dysfunction, post-traumatic stress disorder, sildenafil.*

Лікування чоловіків, постраждалих унаслідок бойових дій (бойова травма), з різними формами еректильної дисфункції

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Бойові поранення здебільшого спричиняють посттравматичний стресовий розлад, що супроводжується еректильною дисфункцією (ЕД), зниженням сексуального бажання, передчасною еякуляцією тощо. Серед багатьох патологічних станів, що зумовлюють розвиток або ускладнюють перебіг ЕД, домінують невротичні розлади, захворювання кровоносних судин, порушення обміну речовин, частковий андрогенний дефіцит, і особливо це стосується учасників бойових дій.
Мета дослідження: оптимізація лікування психогенної та змішаної форм ЕД у чоловіків із перенесеними бойовими травмами.
Матеріали та методи. У дослідження увійшли результати обстеження та лікування 136 чоловіків віком 20–53 роки, учасників бойових дій зі спричиненими бойовими травмами, які мали сексуальну дисфункцію і скаржилися на ЕД. За формою ЕД пацієнтів розподілено на дві групи: 1-ша група – пацієнти з психогенною ЕД, що виникла після бойової травми (n = 84); 2-га група – пацієнти з ЕД змішаного генезу, до якої включено хворих, учасників бойових дій з ендотеліальною дисфункцією, метаболічним синдромом, ішемічною хворобою серця, пізнім гіпогонадизмом (n = 52). Лікування усіх пацієнтів із сексуальною дисфункцією проводили індивідуально, враховуючи етіопатогенез основних захворювань і бойової травми, що спричинили патологію, а також розвиток і перебіг провідних сексологічних синдромів. При цьому застосовували стандартизовані протоколи, що дозволило розподілити пацієнтів за групами та провести вірогідні статистичні розрахунки.
Результати. Продемонстровано, що лікування чоловіків із психогенною формою ЕД, яке включає модифікацію способу життя, раціональну та роз'яснювальну психотерапію, а також застосування інгібітора ФДЕ-5, наприклад силденафілу, при-

зводить до зростання середнього бала МІЕФ-5 із 10,8 ± 0,9 (помірна форма ЕД) до 19,6 ± 1,7 (легка форма ЕД) ($p < 0,05$). Також доцільно використовувати альфа-адреноблокатори, що діють як на периферичні, так і на центральні адренорецептори. Під час лікування хворих з ЕД змішаного генезу найкращі результати спостерігаються при проведенні замісної андрогенотерапії за наявності доведеного андрогенодефіциту; застосуванні ліпідознижувальних препаратів при стійкій дисліпідемії; відміні β-блокаторів (у випадках, коли це можливо); корекції нездорового способу життя пацієнта; проведенні раціональної та роз'яснювальної психотерапії з потенціюванням її ефективності прийомом силденафілу. Таке лікування сприяє підвищенню середнього бала МІЕФ-5 із 11,5 ± 0,9 (помірна форма ЕД) до 17,8 ± 1,6 (легка форма ЕД) ($p < 0,05$).
Висновки. При психогенній ЕД основними порушеннями, пов'язаними зі здоров'ям і якістю життя, є розлади загального та психічного здоров'я, рольового функціонування на фізичному та емоційному рівнях. Модифікація способу життя у поєднанні з раціональною та роз'яснювальною психотерапією, а також застосування інгібітора ФДЕ-5 (силденафілу) дає позитивні результати. У пацієнтів з ЕД змішаного генезу спостерігаються порушення загального та психічного здоров'я, фізичного й емоційного функціонування та життєвої активності. Найкращі результати лікування досягаються за умови проведення замісної андрогенотерапії при доведеному андрогенодефіциті; застосування ліпідознижувальної терапії при стійкій дисліпідемії; відміни β-блокаторів (у випадках, коли це можливо); корекції нездорового способу життя пацієнта; проведення раціональної та роз'яснювальної психотерапії з потенціюванням її ефективності прийомом силденафілу.
Ключові слова: *бойова травма, еректильна дисфункція, посттравматичний стресовий розлад, силденафіл.*

Injuries received in modern wars are mostly polytraumatic, especially in the Russian-Ukrainian conflict. Many combat wounds affect the lower abdomen and pelvic organs, in particular the genitals, which leads to long-term structural dysfunction [1, 2]. There is growing evidence that post-traumatic stress disorders are associated with higher rates of erectile dysfunction (ED), decreased sexual desire, and premature ejaculation [2–4]. Men who have participated in combat operations experience deterioration in sexual health, including decreased libido, difficulty maintaining arousal and the ability to reach orgasm [1, 3, 4]. Combat-related injuries can also have significant effects on men's fertility, as they typically serve during their peak fertility years [2]. The modern scientific understanding of ED indicates the predominant secondary nature of sexual disorders in relation to the diseases that cause them. Neurotic mental disorders, blood vessel diseases, metabolic disorders, and partial androgen deficiency take precedence among the many pathological conditions preceding or complicating ED [5–10]. It should also not be forgotten that the drugs prescribed by the doctor can affect libido and erectile function. Post-traumatic stress disorder, depressive states, and post-traumatic chronic pain may develop as a result of a combat wound [2–4]. These conditions also affect sexual function.

The objective: to optimize the treatment of psychogenic and mixed forms of ED in men with combat injuries.

MATERIALS AND METHODS

The study was based on the results of examination and treatment of 136 men aged 20–53, participants in combat operations with combat injuries, with sexual dysfunction and leading complaints of ED. In this work, injuries to the head or pelvic organs were not taken into account. All patients who underwent treatment and rehabilitation for combat trauma, with complaints of ED persisting for more than one month and who consented to participate in the research, had a comprehensive clinical, laboratory and instrumental examination at the urology clinic of the Danylo Halytsky Lviv National Medical University. All patients underwent a thorough medical history, physical, clinical and psychological examination. Baseline laboratory testing included complete blood and urine tests, blood glucose, lipid profile, and hormonal background. Among the instrumental studies, patients underwent Doppler ultrasonography of the cavernous arteries before and after pharmacological induction of erection.

The research was carried out in compliance with the principles of medical ethics and protection of patients' rights, human dignity and moral and ethical norms, in accordance with the principles of the Helsinki Declaration of Human Rights, the Council of Europe Convention on Human Rights and Biomedicine, the laws of Ukraine; permission of the Bioethics Committee of the Danylo Halytsky Lviv National Medical University (protocol No. 7 from 26 June 2023).

According to the form of ED, patients were divided into two groups:

Group 1 – patients with psychogenic ED after a combat injury (n = 84);

Group 2 – patients with ED of mixed genesis, included patients, participants in hostilities with endothelial dysfunction, metabolic syndrome, coronary heart disease, late hypogonadism (n = 52).

A multi-level approach was used, with results related to sample elements. The pooling of results was based on the grouping of patients according to the form of ED. The treatment of all patients with sexual dysfunction was carried out individually, depending on the etiopathogenesis of the main diseases and the combat trauma that led to it, as well as the development and course of the leading sexological syndromes, taking into account standardized protocols that allowed dividing patients by identity into groups and carrying our statistical calculations. Based on a systemic approach, the state of sexual, somatic, and mental health of patients with sexual disorders was studied, and the effectiveness of therapeutic approaches was evaluated. This system is based on the principles of complexity, differentiation, sequence and phasing, consists of following components – collection of medical and sexological anamnesis, survey using questionnaires IIEF-5, SF-36, physical, instrumental, laboratory examination, treatment of the patient according to the diagnosis and the developed algorithm for the classification and therapy of sexual disorders, the normalization of the interpersonal relations of spouses and the adaptation of their sexual behavior, which is achieved by using cognitive-oriented methods of psychotherapy (explanatory and rational) [11–13].

The treatment of all patients with ED, in particular 84 patients of Group 1 with psychogenic ED, standardized

included the first three positions.

1. Rational and explanatory psychotherapy.

2. Lifestyle changes and risk factors for ED.

During the initial examination, reverse risk factors for the development of ED were revealed. Lifestyle modification and risk factor modification preceded or accompanied ED treatment. Recommendations included lifestyle modification such as weight loss, exercise, as well as determination of side effects of prescribed or non-prescribed drugs, presence of hypogonadism as reverse co-causes of ED development.

3. Sildenafil 50 mg 1 hour before expected intercourse. The drug was prescribed on demand, but at least 8 times (attempts before sexual activity) per month.

4. Trazodone hydrochloride 75–150 mg/day. A dose, divided into several doses, is taken after meals or as a single dose in the evening before bedtime.

5. Regarding Group 1 patients with psychogenic ED only: glycine 0.1 g × 3 times a day sublingually – 100 tab/course – a means that affects the nervous system.

Treatment of 52 patients with mixed ED of Group 2 (patients with endothelial dysfunction, accompanying metabolic syndrome, coronary artery disease, late hypogonadism) was carried out taking into account individual cardiovascular and other somatic pathology, but according to a standardized algorithm that included 6 items.

Positions 1, 2, 3 — identically as with psychogenic ED, rational and explanatory therapy, lifestyle modification and taking a phosphodiesterase type 5 inhibitor – sildenafil were applied. In this group of patients, sildenafil was used on demand mostly for a long time. Treatment of patients with endothelial dysfunction in the absence of contraindications was started, as a rule, with a dose of 100 mg of the drug, so that the man was convinced of its effectiveness. After, on average, twice the use of the dose was reduced, selecting according to the minimum-adequate effectiveness and the presence/absence of side effects/contraindications.

Position 4 was somewhat similar to position 3, but with an emphasis on a greater possibility of the frequency of use of drugs for the treatment of concomitant pathology in patients with endothelial dysfunction:

6. In agreement with the therapist/cardiologist/neuropathologist, if possible, withdrawal (replacement) of drugs that affect erectile function – antihypertensive drugs.

7. All patients with proven persistent dyslipidemia, in whom not only an elevated level of triglycerides was observed (with a high atherogenicity coefficient > 3 Units; elevated cholesterol level > 7.8 mmol/l; elevated triglyceride level > 2.3 mmol/l; reduced level of high-density lipoproteins < 0.9 mmol/l; elevated low-density lipoproteins > 4.14 mmol/l; elevated very low-density lipoproteins > 1.0 mmol/l) received rosuvastatin 10–20 mg in the evening before sleep.

8. Patients with metabolic syndrome (blood glucose > 6.4 mmol/l; glycosylated hemoglobin – HbA1c > 6%; C-peptide >4.2 ng/ml) received standardized:

8.1) metformin 1,000-1,500 mg/day – continued.

8.2) thioctic acid 600 mg/day – the first 5 days intravenously, another 20 days 600 mg/day in tablet form (1 month/year).

8.3) part of the patients, in whom metformin did not give the desired sugar-lowering effect, received glibenclamide 3.75–7.5 mg/day for a long time.

8.4) neostigmine 0.015% – 1.0 ml/day intramuscularly for 10 days (1 course/year).

8.5) thiamine hydrochloride – 100.0 mg, pyridoxine hydrochloride – 100.0 mg, cyanocobalamin – 1.0 mg in 3.0 ml (3.0 ml/day – the first 10 days, another 20 days 1 tab/day; 1 month/year).

9. In patients with laboratory-proven androgen deficiency – the presence of at least one of the listed signs: low level of total testosterone (< 12 nmol/l), low level of free testosterone (< 4.5 pg/ml), increased level of sexsteroid-binding globulin (> 48.4 nmol/l), androgen replacement therapy was performed:

9.1) testosterone undecanoate 1000 mg/3 months intramuscularly constantly.

9.2) testosterone propionate 30.0 mg; testosterone phenylpropionate 60.0 mg; testosterone isocapronate 60.0 mg; testosterone caprine 100.0 mg (250 mg/1 month intramuscularly constantly).

Since medication of four testosterone esters was withdrawn from market in the period from 03.2023 to 03.2024, patients received the drug testosterone undecanoate during this period. Also, the testosterone undecanoate costs on average four times more than the medication of four testosterone esters, for the corresponding period of effect of both drugs, which was also an important factor in the selection of patients.

Antibacterial therapy was carried out taking into account the causative agent of the inflammatory process and its sensitivity to the antibiotic, if possible. Treatment was carried out using azalides, fluoroquinolones, tetracyclines.

"Significant improvement" was noted if, after one month from the start of treatment, the patient noted an improvement in erectile function by at least 2 points according to the ED-mh questionnaire. "Slight improvement" was noted when erections improved by 1 point on the ED-mh compared to the state before the start of treatment. For example, if before treatment a man believed he suffered from severe ED, and after treatment he noted mild ED – slight disturbance of ED or no ED, it was considered as a significant improvement.

RESULTS AND DISCUSSION

The results of treatment of 84 patients with psychogenic ED Group 1 according to the interpretation of IIEF questionnaires are shown in Table 1.

It was shown that the treatment of men with psychogenic ED, which includes lifestyle modification, rational and explanatory psychotherapy, as well as the use of a PDE-5 inhibitor, such as sildenafil, leads to an increase in the mean IIEF-5 score from 10.8 ± 0.9 (moderate form of ED) to 19.6 ± 1.7 (mild form of ED) ($p < 0.05$) (Fig. 1).

At the same time, the drug trazodone, which belongs to the pharmacotherapeutic group of antidepressants and prescribed by a psychiatrist or sexologist, has practically the same effectiveness as the drug glycine.

The results of treatment of 52 patients with mixed ED of Group 2, which are patients with endothelial dysfunction, accompanying metabolic syndrome, dyslipidemia, hypertension, coronary artery disease, and late hypogonadism are shown in table 2.

Table 1

Results of treatment of patients with psychogenic ED Group 1 (n = 84)

Method of treatment	Patients for whom a therapeutic approach was applied, persons/%	Significant improvement in erectile and sexual performance, person/% of all men in the subgroup*	Significant improvement in erectile and sexual function, % of men treated with this technique*	Slight improvement in erectile function, person/%*	Slight improvement in erectile and sexual function, % of men treated with this technique*
Rational and explanatory psychotherapy; sildenafil 50–100 mg 1 hour before coitus	84/100%	48/57.1%	57.1%	22/26.2%	26.2%
Smoking cessation	15/17.8%	6/7.14%	36.7%	5/5.95%	29.6%
Increasing daily dynamic physical activity (exercise)	32/38.09%	18/21.42%	56%	12/14.28%	36.4%
Normalization of body mass index	14/16.66%	6/7.14%	46.1%	6/7.14%	39.5%
A sharp reduction in alcohol consumption (in terms of no more than 50 ml of 40% ethyl alcohol/week)	23/27.38%	11/13.09%	45.7%	7/8.3%	28.3%
Reading educational literature on sex issues	8/9.52%	2/2.5%	28.6%	4/4.76%	42.9%
Refusal to use ranitidine (periodic)	8/9.52	2/2.38%	28.8%	2/2.5%	28.6%
Refusal to use anabolic steroids (periodic)	4/4.76%	2/2.38%	33.4%	2/2.38%	67.7%
Trazodone hydrochloride 75–150 mg/day	33/39.28%	25/29.86%	76%	7/8.3%	19.8%
Glycine 0.1 g × 3 times a day	49/58.3%	29/34.55%	58.6%	11/13.09%	21.8%

Note: * –the overall effectiveness of the therapeutic complex among patients for whom the therapeutic approach was applied 1 month after the start of treatment.

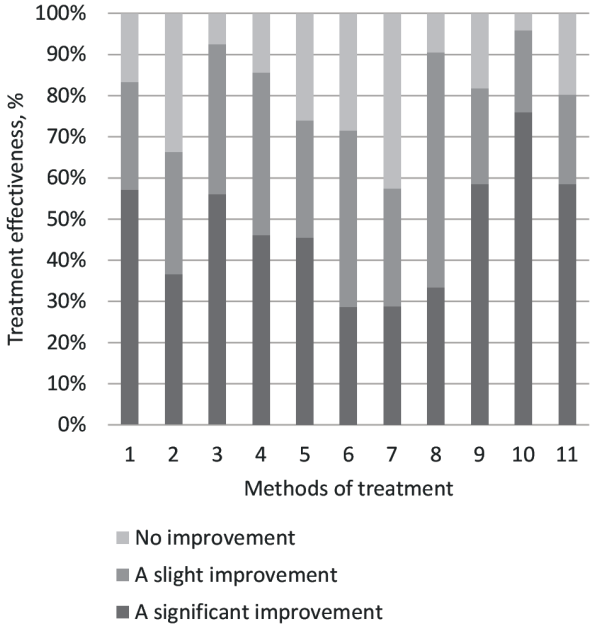

Fig. 1. Effectiveness of treatment of patients with psychogenic ED Group 1 (n = 84)

Notes: 1 – rational and explanatory psychotherapy; 2 – smoking cessation; 3 – increase in daily dynamic physical activity (exercises); 4 – normalization of body mass index; 5 – a sharp decrease in alcohol consumption; 6 – reading educational literature on sex issues; 7 – withdrawal of ranitidine; 8 – withdrawal of anabolic steroids; 9 – use of sildenafil; 10 – use of trazodone hydrochloride; 11 – use of glycine.

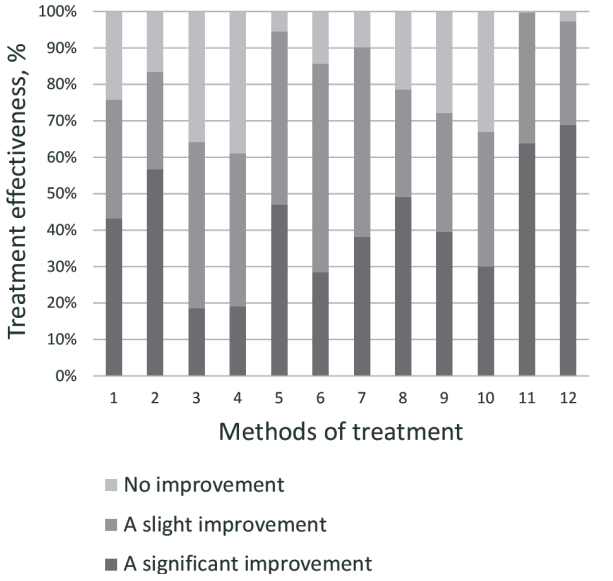

Fig. 2. Effectiveness of treatment of patients with ED of mixed genesis Group 2 (n = 52)

Notes: 1 – rational and explanatory psychotherapy, sildenafil; 2 – lifestyle modification; 3 – replacement of ACE inhibitor; 4 – withdrawal of the diuretic; 5 – withdrawal of β-blocker; 6 – reducing the dose of β-blocker; 7 – withdrawal of another drug affecting ED; 8 – rosuvastatin; 9 – metformin, thioctic acid, vitamin complex drug, neostigmine; 10 – glibenclamide; 11 – testosterone undecanoate; 12 complex androgenic drug – (testosterone propionate 30.0 mg; testosterone phenylpropionate 60.0 mg; testosterone isocapronate 60.0 mg; testosterone caprine 100.0 mg).

Table 2

Results of treatment of patients with mixed ED Group 2 (n = 52)

Method of treatment	Patients for whom a therapeutic approach was applied, persons/%	Significant improvement in erectile and sexual performance, person/% of all men in the subgroup*	Significant improvement in erectile and sexual function, % of men treated with the Anna method*	Slight improvement in erectile function, person/%*	Slight improvement in erectile and sexual function, % of men treated with the Anna method*
Rational and explanatory psychotherapy; sildenafil 50–100 mg 1 hour before coitus	52/100%	22/42.3%	42.3%	17/32.6%	32.6%
Lifestyle modification (became possible)	24/46.15%	13/25.0%	56.9%	6/11.5%	26.3%
Replacing another angiotensin-converting enzyme inhibitor with lisinopril	10/19.23%	2/3.85%	18.4%	4/7.7%	45.5%
Withdrawal of the diuretic	2/3.85%	1/1.9%	20%	1/1.9%	40%
Withdrawal of β-blocker	2/3.85%	1/1.9%	50%	1/1.9%	50%
Reducing the dose of β-blocker	3/5.8%	1/1.9%	28.6%	2/3.85%	57.1%
Withdrawal of another affecting ED drug	10/19.2%	4/7.7%	38.1%	5/9.6%	52.4%
Rosuvastatin 10 mg/day	35/67.3%	18/34.6%	52%	10/19.2%	29.1%
Metformin 1,000–1,500 mg/day	19/36.5%	8/15.9%	40.5%	5/9.6%	26.2%
Thioctic acid 600 mg/day	19/36.5%	8/15%	40.5%	5/9.6%	26.2%
Glibenclamide 3.75–7.5 mg/day	6/11.5%	2/3.8%	30.8%	2/3.8%	38.5%
Neostigmine 0.015%–1.0 ml/day	19/36.5%	8/15%	40.5%	5/9.6%	26.2%
Vitamin complex drug (thiamine hydrochloride – 100.0 mg, pyridoxine hydrochloride – 100.0 mg, cyanocobalamin – 1.0 mg)	19/36.5%	8/15%	40.5%	5/9.6%	26.2%
Testosterone undecanoate 1,000 mg/3 months	4/7.7%	2/3.8%	62.5%	2/3.8%	37.5%
Complex androgenic drug (testosterone propionate 30.0 mg; testosterone phenylpropionate 60.0 mg; testosterone isocapronate 60.0 mg; testosterone caprine 100.0 mg) 250 mg/month	9/17.3%	7/13.5%	70%	2/3.8%	30%

Note: * – the overall effectiveness of the therapeutic complex among patients for whom the therapeutic approach was applied 1 month after the start of treatment.

In Fig. 2 the effectiveness of treatment of patients with ED of mixed genesis with the development of endothelial dysfunction is shown. It can be noted that the best results were observed when androgen replacement therapy is performed with proven androgen deficiency; taking lipid-lowering therapy for persistent dyslipidemia; withdrawal of β-blocker, in cases where it is possible; changing the patient's harmful lifestyle; conducting rational and clarifying psychotherapy and its potentiation by taking sildenafil. Such treatment leads to an increase in the average IIEF-5 score from 11.5 ± 0.9 (moderate form of ED) to 17.8 ± 1.6 (mild form of ED) ($p < 0.05$).

Relatively unsatisfactory results of ED therapy were noted when replacing an angiotensin-converting enzyme inhibitor, withdrawing a diuretic and reducing the dose of a β-blocker, along with other applied methods. However, this is most likely a consequence of the severity of the general condition of the selected patients, taking into account the pronounced concomitant cardiovascular pathology and its treatment with "hard" drugs. Treatment of patients with ED with accompanying pathology was often not accompanied by success, as it was actually a struggle of polyneuroangiopathy with protective factors of the endothelium of vessels and nerve endings and its postponement. In recent years, as a result of the analysis of the impact of combat operations in various regions of the world and combat injuries on men's health, more and more data on post-traumatic stress disorder and the associated higher level of sexual dysfunction (reduced sexual desire, premature

ejaculation, difficulties in maintaining arousal and the ability to reach orgasm). According to our data, post-traumatic stress disorder was observed in 26% of patients treated for ED. Treatment of such patients was based on more thorough and long-term rational and explanatory therapy and lifestyle modification. Combat-related injuries can also have significant implications for fertility preservation. ED not only negatively affects sexual life, but also impairs overall life satisfaction [2].

Erectile function is increasingly recognized as an indicator of a man's general health [14, 15], as well as an important marker of vascular diseases [8, 16–20]. It is known that penile erection is caused by relaxation of cavernous smooth muscles, increased blood flow, and cessation of venous outflow [16, 21–23]. These processes are regulated by spinal reflexes, which depend on visual, imaginal, and olfactory stimuli generated through the central nervous system, as well as tactile stimulation of the penis. Medicines can have an enhancing or inhibiting effect on both the nervous regulation of this reflex and the cavernous tissue. The balance between contraction and relaxation factors governs penile detumescence/tumescence states. Drugs can increase the level of cytosolic calcium, preventing an erection. In contrast, agents that reduce the concentration of cytosolic calcium relax smooth myocytes and initiate an erection.

The most important breakthrough in the treatment of ED was the discovery of oral PDE-5 inhibitors, such as sildenafil, vardenafil, tadalafil [24–26]. Within the central nervous system, the activation of certain neuronal areas is associated with increased sexual activity. An important role in the treatment of psychogenic ED belongs to trazodone, as an antidepressant drug belonging to the class of serotonin reuptake inhibitors [27]. It is used to treat depression, anxiety disorders and insomnia.

The effectiveness of ED treatment with phosphodiesterase inhibitors, especially type 5, α-adrenoceptor antagonists, as well as dopamine agonists, is explained by the implementation of these mechanisms of influence through penile tissue or the central nervous system.

The reasons for refusing pharmacological therapy are insufficient effectiveness, side effects, possible exacerbation of the main disease, psychogenic factors and the partner's attitude. Although the overall response rate to sildenafil as a phosphodiesterase type 5 inhibitor is high, depending on the etiology of ED, 20–40% of patients do not experience an effect from this inhibitor. A telephone survey study found 10–27% of men, who required sildenafil dose escalation, 12% discontinued treatment due to ineffectiveness within 2 years. It remains unclear whether this is due to lack of efficacy or to the inadequacy of use in untreated underlying pathology, since in controlled clinical trials treatment refusal after 2–3 years is 2.1%. Only 1–3% of men stop taking sildenafil due to side effects [28–30]. The drug (sildenafil) for psychogenic ED was mainly prescribed for the purpose of potentiating psychotherapy, in order for the patient to be convinced of the possibility of having adequate full-fledged rigid erections, as well as for the purpose of preventing the development of endothelial dysfunction. In Group 1, the PDE-5 inhibitor was tried not to be used for more than 1 month, so that the patient was not psychologically fixed on drug therapy.

Thus, current pharmacologic treatment of ED can be improved by increasing efficacy, improving pharmacokinetics, and reducing side effects. However, sufficient attention should be paid to the general management of the patient.

The potential success of lifestyle modification is also of particular importance in individuals with ED and concomitant cardiovascular or metabolic disease [5, 18, 31–33]. In such men, the positive consequences of changing an unhealthy lifestyle affect not only the improvement of erectile function, but also the strengthening of the cardiovascular system and the normalization of metabolic processes. Recent studies suggest the value of normalizing lifestyle for both ED and general well-being [33]. Patients are advised to make lifestyle changes regardless of whether PDE-5 inhibitor treatment is used or not. Some studies suggest that the therapeutic effect of PDE-5 inhibitors may be higher if other concomitant risk factors are eliminated [34].

CONCLUSIONS

1. The disorders of general and mental health, role functioning at the physical and emotional levels are main disorders of health-related quality of life in patients with psychogenic ED. Lifestyle modification along with rational and explanatory psychotherapy, as well as the use of the PDE-5 inhibitor sildenafil, gives positive results. All patients showed an improvement in IIEF-5 from 10.8 ± 0.9 to 19.6 ± 1.7.

2. In patients with ED of mixed genesis, which developed against the background of endothelial dysfunction in metabolic syndrome, ischemic heart disease, or late hypogonadism, general and mental health, physical and emotional functioning, and vital activity are impaired. The best treatment results are observed when androgen replacement therapy is performed with proven androgen deficiency; taking lipid-lowering therapy for persistent dyslipidemia; withdrawal of β-blocker, in cases where it is possible; changing the patient's harmful lifestyle; conducting rational and clarifying psychotherapy and its potentiation by taking sildenafil.

3. In the treatment of patients with combat injuries and concomitant ED, the general approaches to the treatment of this pathology particularly medication therapy were used. More attention was paid to the modification of the patients' lifestyle, rational and explanatory psychotherapy.

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