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IMPACT OF DIFFERENT TYPES OF PAIN ON ORGANIZATIONAL DECISIONS IN PALLIATIVE MEDICINE

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This short scientific report reveals important aspects of palliative medicine use of narcotic and non-narcotic analgesics, antidepressants, and anticonvulsants. Specific indications and restrictions on their use, routes of drug administration (oral, intravenous, intramuscular, subcutaneous, transdermal, intrarectal) are defined. The issues of monitoring the dosage of narcotic painkillers by medical personnel and patients themselves, the administration of bolus doses, and the medical equipment necessary for this were discussed. Special attention is paid to such pharmaceuticals as morphine, oxycodone, buprenorphine, butorphanol, morphine. The study of pathogenesis, clinical manifestations, diagnostic methods and the arsenal of therapeutic agents for overcoming acute and chronic pain in palliative patients is important for the organization of hospice and palliative care (HPC). Different types of pain are described depending on the nosological forms, individual sensitivity to pain, sensitization to pain, ways of transmitting the pain signal from the peripheral to the central part of the nervous system, humoral mechanisms of increasing and decreasing the sensation of pain, pain assessment on the Visual Analogue Scale. The need for organizational solutions to improve the situation with analgesia in Ukrainian palliative and hospice institutions, in particular to increase the availability of effective analgesia for palliative patients, was identified. Improving the situation with pain relief corresponds to the national strategy of Ukraine for the development of the HPC system. The report makes a comparison with the development of such a system in Great Britain on the way to one of the best systems of medical care for palliative patients, and on the basis of the futuristic development models described in the literature, it is assumed that Ukraine is on a similar path.

Keywords: *nociception, somatic pain, visceral pain, neuropathic pain, narcotic analgesics, non-narcotic analgesics.*

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According to the definition of the WHO, "the goal of palliative care is to support the quality of life of a person in the final period, to maximally alleviate the physical and moral suffering of the patient and his relatives, to preserve the human dignity of the patient on the threshold of the inevitable". The unified clinical protocol of pal-

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liative medical care for chronic pain syndrome (2012) contains information about palliative analgesia for almost all patients with stage III and IV cancer. Untreated pain can completely destroy a person, causes a feeling of invincibility, uselessness, dependence on doctors and caregivers, and increases the risk of suicide. Thus, pain and analgesia in palliative medicine has great medical and social significance.

Pain relief is one of the basic needs of most palliative patients. Pain reduction can be associated with both direct analgesia and treatment of the main palliative disease, with palliative surgical interventions [1; 2]. Understanding the pathophysiology of pain in various palliative diseases is important for the organization of medical care, the selection of adequate diagnostic approaches, and the achievement of high quality of life indicators for palliative patients of all treatment profiles [3; 4].

Pain is the symptom with which patients most often seek medical help. In palliative medicine, it accompanies most diseases that are responsible for the death of the patient, which is inevitably approaching [5]. Acute pain is accompanied by signs of stress (increased blood pressure, sweating, heart rate and breathing, pupil dilation, etc.), and chronic pain is accompanied by disturbances in recovery mechanisms (fatigue, anxiety, depression, loss of appetite, decreased libido). The strength of sensory and emotional disturbances in patients with pain varies in a wide range depending on individual pain tolerance [6–9]. Thoughts and emotions have a significant influence on the perception of pain. For palliative medicine, the fact that clinicians misperceive chronic pain, which causes or increases anxiety and depression, impairs cognitive functions (attention, memory, executive functions) is important. In this case, patients are often treated for mental disorders without adequate attention to analgesia.

Chronic pain, which most often accompanies palliative diseases, is associated with tissue damage, but its severity does not often correlate with the degree of such damage. This correlation is greater in acute pain. Pain associated with dysfunction of the peripheral or central nervous system is called neuropathic. Pain nociceptive signals can be somatic (from the skin and musculoskeletal system) and visceral (from the internal organs) receptors. Pain from somatic receptors has a sharp or dull local character. In the case of adding a large number of signals from skin receptors, a burning sensation often occurs. The nature of visceral pain often depends on whether this organ is parenchymal or has a cavity. In the first case, it is local and sharp, in the second – diffuse, deep and spasmodic. Visceral pain of parenchymal organs is mostly associated with damage to the capsules, less to deep connective tissues [10–14].

Chronic pain in palliative conditions is often multifactorial. For example, pain in oncological diagnoses, lower back pain are combined nociceptive-neuropathic. The neuropathic component is associated with nerve damage [15–19]. The transmission of the pain signal occurs along the path from the receptor to the spinal cord through the ganglia of the spinal root, and to the opposite side in the lateral columns, and then to the thalamus and cortex. Prolonged pain sensitizes the neurons of this pathway and causes an excessively strong sensation of pain (hyperalgesia) even with minimal irritation of any part of the peripheral nerves. The phenomenon of excessive sensitivity to pain is also described for areas of the central nervous system, up to allodynia (pain reaction to a non-painful stimulus). Pain sensitization of peripheral nociceptors is supported by humoral factors of chronic inflammatory processes, mediators (adrenaline, norepinephrine, serotonin, prostaglandin E2, bradykinin, etc.), vasoactive peptides (substance P, neurokinin A, etc.),

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and reduced by meditative techniques, physiotherapeutic procedures, narcotic analgesics (opioids), endorphins (enkephalin), antidepressants, anticonvulsants, membrane stabilizers, anxiolytics. Understanding these factors allows us to draw a conclusion about the need to start the treatment of chronic pain and chronic inflammatory processes in palliative practice as soon as possible.

The reaction to pain can be regulated by volitional efforts (stoic), or transformed into demonstrative episodes of hysteria, irritability and complaints, with grimaces, which are taken into account to assess the intensity of pain on the Visual Analogue Scale (VAS). If the reaction to pain corresponds to the level of its actual perception, it facilitates the diagnosis of diseases that are accompanied by pain. An excessive or stoic reaction to pain, on the contrary, complicates the diagnosis, and also increases its modulation in the direction of increased sensitivity (due to the sensitization described above) or decreased sensitivity (which interferes with the timely appointment of painkillers in adequate dosages).

Assessment of pain includes not only determination of its real intensity and level of perception, but also the impact on quality of life, sleep, mood, ability to think, study, work, ability to self-care, libido. But it should be taken into account that the word "pain" can describe the patient's state of mind, the level of suffering, anxiety, fear, depressed mood, and even symptoms of clinical depression. Excessive pain complaints may be associated with the desire to receive additional sympathy, sick-leave, narcotic painkillers, with the hysterical (demonstrational) states, and the presence of Munchausen syndrome. Assessment of the intensity of real pain includes the analysis of complaints and external manifestations (grimacing, trembling, blinking, crying, moaning). In autistic disorders, a sign of pain can be loss of contact during communication (absence of any response to appeal) [20–24].

The assessment of pain intensity can be verbal (severe and weak pain; strong, medium and weak) or scored, according to the VAS, in which 0 means no pain, 10 – unbearable pain. For children and illiterate patients, drawings of fruits or faces with grimaces are added to the scale, which help patients to determine whether their condition corresponds to the proposed scale. The opportunity to speak is taken into account. The assessment is carried out over a certain period (for example, in the last month or week) and now (before and after procedures that can cause pain). During artificial lung ventilation, sedation, the condition is assessed by other scales, eye movement, reflexes of the pupils, eyeballs, blinking [25–27].

Narcotic and non-narcotic analgesics, antidepressants, and anticonvulsants are used to treat pain. Analgesics are used by infusion and locally (for example, in the form of blocks, plasters). Cognitive-behavioral therapy allows patients to develop their own strategies for coping with pain. Most of these strategies are based on overestimating the value of pain and distraction. Physical exercises, reflexotherapy, meditation, prayers, hypnosis can be effective for the treatment of chronic pain also [28–32].

Oral nonsteroidal anti-inflammatory drugs, most of which cannot be given on an empty stomach, may be sufficient for mild to moderate pain. In elderly patients, when prescribing these drugs, cardiovascular risks (possibility of bleeding, myocardial infarctions, strokes), risks of kidney failure, and individual tolerance should be taken into account. An important feature of these drugs is the absence of the risk of addiction [33–37].

The presence of severe pain implies the use of narcotic painkillers. First of all, opioids, agonists (morphine, oxycodone) and

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antagonists (buprenorphine, butorphanol) of receptors of the same name in the central nervous system. The need for long-term analgesia in palliative medicine requires the selection of drugs with minimal addiction and other side effects. The appointment of non-narcotic pain relievers usually precedes the appointment of narcotics, and their joint appointment allows to reduce the doses of narcotics, which reduces the risks of addiction. Taking narcotic painkillers for more than three months requires an assessment of pain, improvement of the patient's functional state, and signs of addiction. If the pain level does not decrease even with an increase in the dose, narcotic painkillers are discontinued. One of the important risks of further drug use is death from respiratory arrest [38–42]. Elderly people and infants are usually more sensitive to opioids and need lower doses than younger people. Treatment with methadone should be carried out under the control of the electrocardiogram, because it has an effect on the prolongation of the QT interval. Methadone has the highest mortality rate among opioids, so doctors need special training to prescribe it. Patient-controlled analgesia is part of the patient-oriented approach in palliative care, but, unfortunately, this principle is not often followed in Ukraine [43–46]. However, it should also be noted that at one time Great Britain was in a similar position and on a similar path, which today has one of the best developed systems of hospice and palliative care with high availability of effective pain relief. The existing futuristic models of the development of palliative care systems in these countries allow us to see the same development vectors [47; 48].

The quality of life of patients is also affected by the choice of optimal forms of medical drugs, among which the minimum number of drugs should be administered parenterally. Both non-narcotic and narcotic pain relievers can be administered orally and transdermally. Lists of equivalent doses have been developed for different routes of administration. Transdermal drugs are most convenient for administration at night, if round-the-clock administration is necessary. At the same time, the intravenous method of administering painkillers ensures the fastest onset of their action. In the conditions of postoperative resuscitation, doctors have access to equipment capable of clearly dosing the infusion of painkillers for a long time. But in therapeutic wards and hospices, intravenous infusion requires constant monitoring by medical staff. The intramuscular route of administration is able to provide a longer analgesic effect compared to the intravenous route, but it is more painful for the patient in itself. Another type of parenteral administration provides a long-lasting analgesic effect – subcutaneous administration. This method is often used in oncology practice. Morphine is also often given epidurally and intrarectally. Its dosage in such cases to relieve acute pain is 5–10 mg and 0.5–1 mg, respectively. With intrarectal administration, morphine is often combined with local anesthetics (ziconotide, clonidine) [49].

If long-term analgesia is necessary, the number and interval of bolus administration of drugs should be controlled by the doctor. Important for hospices is staffing, which is often less than needed. The doctor in the hospice must work around the clock and monitor the anesthesia every 4 hours, in order to prevent overdose of narcotic drugs. Bolus doses (for example, 1 mg of morphine) can be self-administered by pressing a button no earlier than every 6 minutes. Pressing the button earlier will not lead to a new dose of the drug, which prevents an overdose. It is also not possible to use such dispensers in small children, adults with dementia. But the need to sleep, the fatigue caused by the disease, the drowsiness from the administration of painkil-

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lers, many of which have a sedative effect, require hospices to be provided with expensive equipment to control pain relief. But the current level of financing of inpatient hospice care does not allow to buy all the necessary equipment for pain relief, despite certain successes in the implementation of medical guarantee programs for pain relief [50–53]. Improvement of the state management of the hospice and palliative care system should include systematic steps towards greater availability of painkillers, in particular narcotics.

Conclusions

The conducted research allows us to draw a conclusion about the need to expand the use of narcotic and non-narcotic pain relievers in palliative medicine. Concomitant with such expansion is the need to train medical personnel in all pharmacological aspects of safe analgesia. Instead, the state needs to strengthen the material and technical base of hospices for the purchase of equipment necessary for pain relief. It is the complexity and at the same time the need for constant anesthesia of the majority of palliative patients that requires both the elimination of the personnel deficit and the constant improvement of the qualifications of the medical staff of Ukrainian hospices. At the same time, the pathophysiological and diagnostic aspects of pain in palliative patients need to be studied and widely discussed in professional circles.

Conflict of interest is absent.

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ВПЛИВ РІЗНИХ ВИДІВ БОЛЮ НА ОРГАНІЗАЦІЙНІ РІШЕННЯ У ПАЛІАТИВНІЙ МЕДИЦИНІ

У цьому короткому науковому повідомленні розкриті важливі для паліативної медицини аспекти використання для знеболення наркотичних та ненаркотичних анальгетиків, антидепресантів, протисудомних препаратів. Визначені окремі показання та обмеження щодо їх використання, шляхи введення препаратів (пероральний, внутрішньовенний, внутрішньом'язовий, підшкірний, трансдермальний, інтраректальний). Обговорені питання контролю дозування наркотичних знеболюючих з боку медичного персоналу та

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самих пацієнтів, введення болюсних доз, необхідне для цього медичне обладнання. Окрема увага приділена таким фармацевтичним препаратам як морфін, оксикодон, бупренорфін, буторфанол, морфін. Вивчення патогенезу, клінічних проявів, методів діагностики та арсеналу лікувальних засобів для подолання гострого і хронічного болю у паліативних хворих є важливим для організації хоспісної та паліативної допомоги. Описані різни види болю залежно від нозологічних форм, індивідуальна чутливість до болю, сенсибілізація до болю, шляхи передачі больового сигналу від периферійного до центрального відділу нервової системи, гуморальні механізми підсилення та зменшення відчуття болю, оцінка болю за візуально-аналоговою шкалою. Визначена необхідність організаційних рішень для покращення ситуації із знеболенням в українських паліативних та хоспісних установах, зокрема для збільшення доступності ефективного знеболення для паліативних пацієнтів. Покращення ситуації із знеболенням відповідає національній стратегії України щодо розбудови системи хоспісної та паліативної допомоги. У повідомлення зроблено порівняння із розбудовою такої системи у Великобританії на шляху з однієї найкращих систем медичної допомоги паліативним хворим та на підставі описаних у літературі футурістичних моделей розвитку зроблено припущення, що Україна прямує аналогічним шляхом.

Ключові слова: *ноцицепція, соматичний біль, вісцеральний біль, нейропатичний біль, наркотичні знеболювальні, ненаркотичні знеболювальні.*

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