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Aspects of palliative medicine in intensive care units: A narrative review

Abstract

Background: The perspective of palliative care has changed dynamically over the years, and palliative medicine, which was originally concerned with patients with advanced oncology diseases, has become an interdisciplinary area. Many societies have published guidelines for the use of palliative medicine in intensive care units.

Methods: This article presents indications and methods for implementing the principles of palliative medicine in intensive care units. Particular attention is devoted to the consultations of palliative medicine for current medical trends — COVID-19 infection, oncological diseases, fragility syndrome, and end-stage circulatory failure.

Conclusions: Elements of palliative medicine are necessary for everyday practices in the intensive care unit. The most important task in cooperation is to present classifications that can help in the objective identification of patients requiring palliative care. It seems that creating a checklist of the qualifications for a palliative medicine consultation can be the next step towards making decisions about this form of therapy.

Palliat Med Pract 2022; 16, 3: 150–155

Key words: futile therapy, intensive care unit, palliative care, palliative medicine

Introduction

The purpose of intensive care therapy is to maintain the function of the organs among critically ill patients, most of whom have reversible disease processes. In many cases, however, despite using many organ-supporting methods and pharmacotherapy, improving the health or limiting the ongoing threat to life is not possible. Advanced evaluations of the

main disease and coexisting diseases, as well as the possibility of improving health, are often medical dilemmas [1–4]. All these questions are significant for the medical staff, as well as the patient's family and caretakers.

The range of palliative medicine activities and the methods of their implementation result from the applicable national legal regulations. Since 2014, Poland has applied the protocol of futile therapy. The purpose

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Palliative Medicine in Practice 2022; 16, 3, 150–155

Copyright © Via Medica, ISSN 2545–0425, e-ISSN: 2545–1359

DOI: 10.5603/PMPI.2022.0011

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of this protocol is to present the reasons to limit or not apply various therapy methods (cardiopulmonary resuscitation, mechanical ventilation, renal replacement therapy, heart electrotherapy, mechanical- and pharmacological-assisted circulation, extracorporeal assisted ventilation, extracorporeal liver assistance) when the ongoing therapeutic process is inefficient. After creating the protocol of futile therapy, palliative care became the main goal. The protocol of futile therapy in patients without the possibility of a conscious declaration of will while undergoing intensive therapy was created by an interdisciplinary team of medical areas and nonmedical staff, including lawyers, sociologists, and psychologists [5–10].

Methods

A structured electronic search of the literature was conducted in the PubMed, and Scopus, databases. Eligible studies included the following criteria: (1) studies that analysed palliative medicine in the intensive care unit, (2) studies on palliative medicine during the COVID-19 pandemic, (3) studies on palliative medicine in oncological patients published in peer-reviewed journals from 2011 to 2022, (4) articles included peer-reviewed studies and review publications using the following keywords: palliative medicine, intensive therapy. Full-text articles, clinical studies, randomized controlled trials, and systematic reviews, were included. Articles published without reviews, articles from popular science magazines, and editorials were excluded. Two researchers collected literature, and others checked the validity of the conclusions. The aim was to identify the necessary knowledge.

Models of implementations of palliative medicine in the intensive care unit

When the previous therapeutic goals cannot be fulfilled, palliative medicine elements should be considered. It was presented that previously applied palliative medicine limits patient suffering and improves acceptance of the patient's disease by their family [11–14].

There are two models of palliative medicine in the intensive care unit. The integration model involves the introduction of leading palliative medicine elements by anaesthesiologists based on skills and interdisciplinary knowledge. The consultation model is based on the establishment of job schedules by palliative medicine specialists [15–18]. In both models, the establishment of therapeutic goals, observation and assessment of the received therapeutic results, and early identification of patients needing palliative care are very important [1, 7]. The extent and effects of

guided medical actions to sustain vital functions should be subject to systematic reassessment; at the same time, it emphasizes the significance of informing patients about their state of health, the effects of the treatment and alerting family or patient caretakers. Information transmission intensifies the process of making and accepting the decision with the involvement of close persons [17]. Retrospective observations have shown that intervention by palliative medicine doctors prominently abridges hospitalization time in the intensive care unit, as well as total hospitalization time, in addition to reducing lifelong effects [19]. It was also demonstrated that the consultation model, in a more significant way than the integrative model, influenced the limitation of hospitalization time and enhancement of the level of acceptance and understanding of medical actions from the family side [19, 20].

At the same time, the retrospective analysis indicated that expectations of the family of critically ill patients in the intensive care unit were multidirectional, being not just towards the patient but also towards the family, which was consciously preparing for complications of the process of death and making decisions about avoidance, restricting aggressive and excessive medical actions. These conclusions indicate that end-of-life care, except for pain therapy and other symptoms, should involve aspects of patient dignity and respect. It is indicated that interventions undertaken in the intensive care unit to improve communication with patients' families, to obtain support in making decisions and to arrange care of the patient were welcomed by the family members [7, 16, 21].

Qualification for palliative medicine consultation in the intensive care unit

To date, guidelines for identifying predisposing factors for palliative medicine consultations have not been created. Hua et al. performed an analysis of palliative medicine consultations in intensive care units and approved the following parameters: the main indicators were spending at least 10 days of hospitalization in a department other than the intensive care unit, aged above 80 years old, at least two or more comorbid conditions, diagnosed with a malignant tumour of stage IV with metastases, successful reanimation, and diagnosed with intracerebral haemorrhage demanding mechanical ventilation. As an alternative, the following is accepted: willingness/request of the family, family objections to the suggested therapeutic and diagnostic process, frailty syndrome, the risk of death during hospitalization in the intensive care unit, hospitalization in the intensive care unit lasting over 1 month, prognosis to survive less than 6 months,

and secondary admission to the intensive care unit during hospitalization. The alternative indication to the palliative medicine consultation was accepted as follows: failure of 3 or more organs, inspiratory oxygen concentration/arterial partial pressure of oxygen index less than 300 ($\text{FiO}_2/\text{PaO}_2 < 300$), platelets counts less than $100.000/\text{mm}^3$, total bilirubin concentration above 2 mg/dL, neurological assessment score of Glasgow Coma Scale (GCS) < 13 , vasopressor administration. Moreover, a neurological state GCS score under 8 persisting for more than one week in patients above 75 years old, and a GCS score of 3 were alternative factors for palliative medicine consultation. Additionally, patients with global cerebral ischaemia and advanced dementia were considered indicators for consultation. Patients in which the described factors were observed manifested higher mortality and a higher rate of hospice handover (39.7%) than patients in whom none of those factors were observed (11.1%). Authors indicated that 1 out of 7 patients admitted to intensive care units met at least one consultation parameter, and in 25%, many factors known as triggers were noted [21].

In the IPAL-ICU (Improving Palliative Care in the Intensive Care Unit) project, a checklist was suggested to identify patients requiring the specialized assessment of palliative medicine by using the following parameters: high risk of death during hospitalization in the intensive care unit or during hospitalization, advanced medical actions applied for intensive therapy without achieving planned results, dissatisfaction and request of the patient/family, unsatisfactory results from the undertaken actions of palliative medicine, suggestions by the interdisciplinary team of the intensive care unit, and incomplete use of collaboration with palliative medicine specialists [18, 22, 23].

Shira et al. conducted an analysis and proposed including palliative medicine patients above 70 years old with the coexistence of 2 or more extra diseases, such as congestive circulatory failure, critical valvular heart disease, advanced coronary disease, stroke in the past medical history, hypertension, chronic pulmonary disease, diabetes, cancer except stage IV, renal failure, liver diseases or dementia [22]. Other authors introduced the intensive care unit — palliative care referral checklist, which identified the following groups: poor candidates for critical care, where continuing intensive care will not offer an overall benefit, such as state after successful resuscitation, stage IV oncology disease, advanced dementia, primary stage III or IV circulatory failure on the New York Heart Association (NYHA) scale with an ejection fraction $< 20\%$, repetitive hospitalizations, end-stage renal diseases unqualified for renal replacement therapy, clinical frailty score ≥ 7 ,

poor treatment response, irreversible condition, the desired outcome not achieved and multisystem organ failure (2 or more organs). The following groups in the classification are considered: extremely poor anticipated quality of life with poor neurological recovery, long-term ventilator dependence, massive intracerebral haemorrhage with bad neurological prognosis, massive ischaemic stroke, ischaemic encephalopathy, hypoxic encephalopathy and decisional conflicts, as well as special considerations (patients or family decisions about not extending the therapy or undertaking the hospice care) [24].

Elements of palliative medicine in the COVID-19 pandemic for the intensive care unit

The importance of palliative medicine should also be recognized in the current epidemiological situation of the COVID-19 pandemic in the intensive care unit [25–30]. In 2010, Downar and Seccareccia reviewed the influenza H1N1 epidemic, which highlighted the impact of palliative medicine, and indicated the importance of sectors: preparing the triage rules, protocols of proceedings, checklists, maximization of the palliative medicine consultation in the intensive care unit, equipment and specialist preparation, training courses for hospital workers, palliative medicine departments, and hospices [25]. The retrospective analysis of hospitalization in intensive care unit patients with COVID-19 showed that statistically, the demand for a palliative medicine consultation was higher (204 vs. 371 $p < 0.001$), and most of them involved patients over age 70 [26]. To identify the need for palliative medicine consultation for a patient with COVID-19, the following criteria needed to be met: comorbidities, the need for oxygen therapy, the need for additional specialist consultation, serum creatinine concentration as a criterion for renal failure, failure to achieve the therapeutic goals, social observations, and continuation of treatment. Other authors indicate that the main parameters for palliative medicine consultations for intensive care unit patients with COVID-19 should be the state after successful resuscitation, failure of at least 2 organs and the need for mechanical ventilation [24]. It was also observed that the need for a palliative medicine consultation was expected from caregivers or the patient's close family. The author emphasizes that patients who need palliative medicine consultation also need the identification of many symptoms that can be overlooked during treatment. It has been demonstrated that 75% of consultations support patients or their families, 33% of them plan therapy, and only 8% of all consultations treat patients [29]. Recommendations to implement

palliative care when treating COVID-19 patients in the intensive care unit were also developed during early cooperation between the intensive care unit and palliative care teams, choosing a contact person of the patient, assessing the patient's status with the palliative care checklist criteria, systematic therapy control plans by intensive care units and palliative care teams, early information about the treatment results given to the family members, and continuous palliative care treatment beyond the intensive care unit.

Crucial factors of palliative medicine consultation in the intensive care unit

Another important factor in assessing the patient's predisposition to palliative medicine is frailty syndrome, which is diagnosed in approximately 30% of patients admitted to intensive care units and it is characterized by unintentional weight loss, low mental activity, movement disorders and the presence of pain [1, 7, 16]. Patients in the final stage of heart failure who are hospitalized in intensive care units are another dominant group qualified for a palliative medicine consultation. Studies suggest that every patient with pulmonary hypertension and primary heart failure symptoms higher than a 3rd class on the NYHA scale should be treated by palliative medicine specialists, and palliative medicine should be implemented because of need, rather than a high risk of death or the worsening of the patient's condition [31–35].

Another important aspect is the application of the recommendations of palliative medicine to oncology patients hospitalized in intensive care units [13, 36]. It has been reported that 15% of intensive care beds are used by oncology patients [37]. Epidemiological observations indicate that the higher risk of hospitalization in the intensive care unit relates to patients with solid tumours and increases to 5–10% in the two-year follow-up period from the diagnosis of disease, while the survival rate is 52–83%. The best long-term prognosis (30, 365, 739 days) was presented for intensive care unit patients with recognized haematological cancer. The authors noted that the scope of procedures provided for this group of patients is very different, but they always consider the issues of therapy futility. The current guidelines suggest that the decision about the futility of therapy should be made after 3 days of hospitalization or even after 7 days concerning haematological cancer patients [38]. It has also been reported that the onset of acute renal failure symptoms is an unfortunate prognostic factor, and it was the highest mortality rate [38, 39]. In addition, the most frequent reasons for the readmissions of oncology patients to the intensive care unit two days after discharge were additional pul-

monary diseases, and over 7 days, a coexisting renal failure index, a history of heart failure, chemotherapy performed 4 weeks before hospitalization, and the diagnosis of sepsis as the cause of hospitalization in intensive care units was also observed [39]. Azoulay et al. proposed a pattern of dealing with oncology patients in intensive care units, where the following elements were isolated: A — intensive care unit admission, B — beware false beliefs, C — standard of care, D — day-to-day decisions, and E — evaluation. In a retrospective observation, the research showed that the early introduction of palliative medicine to oncology patients using home care significantly reduced the risk of hospitalization in the intensive care unit in their last months [37].

The perspective of palliative care has changed dynamically over the years, and palliative medicine, which originally concerned patients with advanced oncology diseases, has become an interdisciplinary area, the scope of which covers the care of patients and their families. This team includes specialist doctors, nurses, physiotherapists, social workers and priests who provide psychological and spiritual support [3]. This type of care aims to provide the highest comfort and help in the prevention and treatment of different syndromes, independent of the patient's diagnosis of advanced and final-stage irreversible disease [1, 4]. It needs to be highlighted that qualifications to become a patient of palliative medicine at the intensive care unit should be preceded by a detailed therapeutic and diagnostic process analysis and the assessment of potential medical goals. Technological progress in the invasive methods of supporting organ function, pharmacology development, and epidemiological changes resulting in an increased number of patients with cancer and heart diseases leads to more patients with final-stage organ failure to the intensive care unit with the premise of reversing the progress of the disease. The particular issue is the implementation of palliative medicine principles for patients with respiratory failure during COVID-19 infections. It needs to be noted that palliative medicine is all about holistic care for patients and their families. This aspect is very important to communicate with those who witnessed disease, death and acceptance of medical decisions.

Models of functioning of palliative care teams in hospital services are diversified and this is due to the lack of uniform legal and financial conditions. However, the observed socio-medical trends are universal, and indicate that because of the development of medical sciences, ageing society and multiple diseases, the demand for palliative care services will increase. As early as 2011 in the USA, the results of a study were presented, which described that 63% of hospitals

declare the functioning of palliative care teams, of which even 85% in hospitals with more than 300 beds have specialist teams. The authors emphasized that the availability of palliative medicine consultations depends on hospital location, hospital type and size, and tax status [41, 42]. The available classifications do not describe the urgency or intensity of symptoms, or clinical condition, but only indicate which diseases predispose to palliative care consultation in the intensive care unit. Polish recommendations of futile therapy have a very similar structure. It is a form of an interdisciplinary descriptive presentation of the patient's health condition, therapeutic and diagnostic problems and prognosis. It is not a quantitative form. It seems that the creation of a quantitative scale would improve the practical implementation of palliative care. The observation is different concerning the classification of palliative care to oncological patients. Numerous publications indicate models of a quantitative assessment of the need to implement palliative care depending on the advancement of cancer (NCCN recommendations) [43–46].

Conclusions

Many countries have published guidelines for the use of palliative medicine in intensive care units, but no universal classifications have yet been developed that can help in the objective identification of patients requiring such treatment. It seems that creating the quantitative scale or checklist of the qualifications for a palliative medicine consultation can be the next step towards making decisions about this form of therapy. Moreover, cooperation is still needed to improve knowledge, and palliative medicine is necessary for everyday practices in the intensive care unit.

Declaration of conflict of interests

All authors declare no conflict of interest.

Funding

This study has no funding.

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