

Preanesthesia evaluation of oncological patients requiring palliative procedures

Avaliação pré-anestésica em pacientes oncológicos a serem submetidos à cirurgia paliativa

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ABSTRACT

Palliative surgery in cancer patients are surgical procedures that do not aim to cure a patient but to improve their quality of life by providing relief from symptoms caused by an existing tumor. In addition to a patient's higher risks, due to an increased number of related comorbidities, as well as the degenerative process caused by the pathology itself and its treatments, there are several other elements that may influence the decision-making process regarding the care to be provided. The needed solicitude for cancer patients with no prospect of cure should be of interest for both the patient and the health system in the management of welfare and epidemiological strategies. The objective of this narrative literature review is to gather knowledge regarding the preparation of cancer patients requiring palliative surgical procedures in order to improve their quality of life, highlighting the important role of the anesthesiologist for optimizing the postoperative outcomes. In Brazil, performing an outpatient preanesthesia evaluation is recommended by the Federal Council of Medicine (CFM) under resolution number 2174/2017, since each preparation for an elective anesthetic procedure informs the anesthesiologist about the patient's clinical conditions, as well as the possible risks that can be alleviated during the period prior to surgery and on planning special care in the pre, intra and postoperative periods, thus reducing the morbidity and mortality resulting from such procedures. These professionals are in a privileged position to alleviate suffering, as they have the necessary tools to deal with many symptoms that frequently occur in patients undergoing palliative care.

Keywords: Anesthesia; Palliative Care; Oncology Service, Hospital.

RESUMO

A cirurgia paliativa em pacientes com câncer objetiva procedimentos não curativos mas que tem a intenção de melhorar os sintomas causados pelo tumor. Apesar desses pacientes apresentarem risco aumentado devido ao aumento do número de comorbidades existentes, assim como pelo próprio processo degenerativo causado pela patologia e seu tratamento, existem diversos fatores que influenciam a tomada de decisão a respeito do cuidado prestado. A condução eficiente do atendimento de pacientes oncológicos sem perspectiva de cura deve ser de interesse tanto para o paciente quanto para o sistema de saúde na administração de estratégias sanitárias e epidemiológicas. O objetivo desta revisão narrativa de literatura é aperfeiçoar o conhecimento relativo ao preparo de pacientes oncológicos que serão submetidos a procedimentos paliativos no intuito de otimizar o desfecho perioperatório e a qualidade de vida desses, evidenciando a importância do anestesiológico no desfecho positivo neste cenário. No Brasil, a realização avaliação pré-anestésica ambulatorial é recomendada pela resolução do Conselho Federal de Medicina (CFM) número 2174/2017, uma vez que cada preparo para um procedimento anestésico eletivo informa o anestesiológico sobre as condições clínicas do paciente, sobre possíveis fatores de risco passíveis de alívio durante o período que antecede a cirurgia e sobre planejamento de cuidados especiais no pré, intra e pós-operatórios, diminuindo assim a morbimortalidade resultante do procedimento. Este profissional encontra-se em posição privilegiada para o alívio do sofrimento pois possui as ferramentas necessárias para o controle de muitos sintomas que ocorrem frequentemente nos pacientes em cuidados paliativos.

Palavras-chave: Anestesia; Cuidados Paliativos; Serviço Hospitalar de Oncologia.

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INTRODUCTION

According to the Brazilian Institute of Geography and Statistics (IBGE), chronic degenerative diseases are a major public health problem in Brazil and worldwide, and their prevalence has been increasing over the years.¹ According to a National Health Survey (PSN) released by IBGE in partnership with the Ministry of Health in 2019, 52% of the population over 18 years of age received the diagnosis of at least one chronic disease.² In addition to high mortality rates, these pathologies present a greater number of related comorbidities when compared to other causes of death.³

Cancer is a chronic degenerative disease accounting for 12% of the causes of death in the world. With approximately 15 million new cases per year, the disease has important consequences in the epidemiological profile and, therefore, in health strategy management. Policies that encourage scientific development and economic investment in the production of alternative solutions for the reception, follow-up, treatment and care of cancer patients have been shown to be relevant in the characterization of health services and actions.⁴

Patient-centered medicine has been increasingly discussed in recent decades, leading to the promotion of health-related quality of life (QoL) for patients, based on an expanded perspective of care that encompasses a holistic view of the individual and the process of becoming ill, and even better reported prognoses^{5,6}. This perspective entails new meanings in the follow-up of PC patients, who face a life-threatening illness, and whose symptom relief should be one of the key guiding principles of health care^{7,8}.

When dealing with cancer patients, this objective should be directed towards improving their QoL, relieving the symptoms presented and ameliorating their clinical signs, especially for those at an advanced stage of the disease, thus reducing the stress associated with invasive procedures. All these in due accordance with the very definition of the term "palliation", meaning relief of disabling manifestations and re-establishment of impaired organic functions⁹. The number of palliative surgical procedures in this population has increased in Brazil and worldwide, and the role of anesthesiologists in perioperative management has a positive impact on the quality of the service provided. In our country it consists of an essential care provision reassured by the Federal Council of Medicine's resolution n.º 2174/2017¹⁰.

Among the histopathological classifications, solid malignant tumors and those of hematogenous origin cause varied symptoms that may lead to the need for palliative surgeries¹¹. Malignancies in the scope of palliative care are described as advanced, unresectable or incurable, and among

their symptoms we can mention: obstructions, bleeding, thrombosis, ischemia, infections, fistulas, pain, difficulty in lymphatic and/or blood drainage, ascites, pleural and/or pericardial stroke, feeding difficulties, hernias, adhesions, which are subject to surgical treatment. The definition of palliative surgery varies, but it is commonly used when the objective is to relieve symptoms and improve QoL^{12,13}.

Preanesthesia evaluation is essential for therapeutic success, regardless of the diagnosis. Its benefits include increased procedure and patient safety, increased perioperative care, better results, reduced costs, improved use of available resources, and patient and surgical team satisfaction¹⁴. In the case of cancer patients, the time factor is extremely important as it is directly related to the disease progression and prognosis¹⁵.

Adequate preoperative preparation of patients requiring an elective anesthetic procedure is essential insofar as it informs the anesthesiologist about their clinical conditions, as well as of possible risk factors that can be alleviated during the period prior to surgery. It is essential also for the planning of special care during the pre, intra and postoperative stages, thus reducing morbidity and mortality rates as a result of such procedures. In Brazil, outpatient preanesthesia evaluation is recommended by the CFM's resolution number 1802/2006.¹⁶ This resolution also ensures the minimum conditions for performing any anesthetic procedure safely. In addition, on December 14, 2017, a new resolution (number 2174/2017) was published, which reaffirms the need to carry out a preanesthetic consultation to evaluate the patient's clinical conditions, to better plan the anesthetic procedure and contribute to the qualification of care in health, as well as providing for the patient's free and informed consent¹⁰.

Based on studies that highlight the importance of preanesthesia evaluation in cancer patients, the main objective of this literature review is to contribute to the improvement of palliative surgery management, thus optimizing the perioperative outcomes and the QoL of patients undergoing palliative surgeries. Its secondary objective is to point out the main factors that influence such outcomes.

METHODS

This work consists of a narrative literature review on the core aspects of preanesthesia evaluation of oncological patients requiring palliative surgery and its role on perioperative outcomes, especially with regard to the measures for improving their QoL based on the principles of PC.

The descriptors used for the bibliographic survey were: preanesthesia evaluation, palliative care and cancer. In order to gather updated information, only articles published in the last 25 years were selected, the exception being the

text on cardiac risk in non-cardiological surgeries by Lee Goldman, which was published in 1977¹⁷. The SciELO, Lilacs, ScienceDirect and Pubmed databases served as sources for accessing the texts. The selected articles were read in full in order for the researcher to identify the relevant information.

Scientific productions that were not available in full for reading were excluded, as well as productions published before 1977, due to the historical milestone represented by the publication of Goldman and collaborators in that year. Articles published in Portuguese and English were selected and reviewed. The articles analyzed were selected based on their relevance, observing the title of the publications. The data were presented in the form of an essay in order to make the relevant information more reader-friendly.

The selected textual materials include meta-analyses of randomized clinical trials, qualitative and descriptive studies, case reports and evidence based on expert opinion. Among them there are articles published in the health area (newspapers, magazines, book chapters, master's thesis, guidelines, bulletins, archives, annals, guides and manuals) nationally and internationally, in addition to council resolutions published in national and international press (official union gazette, federal council of medicine, Ministry of Health and World Health Organization).

The 54 articles were selected from random sampling. The body of the articles was related to the topic discussed in this text, with no limit on the number of words or secondary diagnoses. The analysis of the texts was based on the significance level for the objective here proposed. The search for bibliographic references was carried out between March and December 2022.

An exhaustive reading of the title and abstract of each article was carried out in order to exclude those that did not fit the guiding question of this review or because they did not comply with the guidelines of our country's present regulatory standards. No intervention was made. Limitations and biases may have occurred since the author's academic training is in the area of pain, a fact that may influence the discussion and interpretation of results, overestimating the importance of the professional trained in the area.

RESULTS

Similar to other patients with the prospect of being submitted to anesthesia, cancer patients must also be properly evaluated in the preanesthetic consultation. The pathophysiological changes observed in these patients are diverse. They vary according to the histopathological diagnosis, the evolution and stage of the disease, time of treatment, among others¹⁸.

Some specific interventions performed in the preanesthetic evaluation result in positive outcomes for patients

with specific comorbidities. Although additional interventions such as the request for complementary tests can contribute to making the care provided more expensive, they should be performed when the planning of the anesthetic procedure is directly dependent on the results of those tests.¹⁹ In addition, based not only on the patient's clinical history but also on the physical examination performed by the anesthesiologist, and should he deem it necessary to carry out new diagnostic tests, the American Society of Anesthesiologists (ASA) recommends that those complementary exams must be requested in order to better assess the patient's overall health according to the ASA's classification system, as well as to provide an adequate anesthetic planning and a safe procedure¹⁴.

Based on ASA's recommendation, the Brazilian CFM's resolution number 2174/2017¹⁰ asserts that it is essential for the anesthesiologist to know the clinical conditions of the patient who will be put under anesthesia, as well as to propose an anesthetic plan. For such a purpose, according to the anamnesis and physical examination findings, it may be necessary to carry out additional tests and evaluation by other specialists. In order to ensure the necessary conditions for performing anesthesia safely, these additional tests can be recommended mainly among high-risk groups, such as cancer patients in palliative care, in an attempt to optimize the treatment of decompensations that may be present due to an underlying disease or existing comorbidities²⁰.

Depending on the comorbidities that cancer patients may present (malnutrition, malabsorption, anemia, dyspnea, liver, kidney, broncho-pulmonary, cardiovascular and/or endocrine diseases, malignancy with or without metastases, bleeding, among others) due to their treatment (medication in use, radio and chemotherapy, for example) or as a result of the proposed procedure (high risk of blood loss, intraoperative time, site to be explored, etc.), laboratory tests (blood count, blood glucose, electrolytes, liver, kidney and thyroid function tests, β HCG, blood typing, urinalysis, PT and aPTT), electrocardiogram (ECG), imaging tests (chest X-ray) should be recommended²¹.

By combining the clinical evaluation of the anesthetist and that of other specialists with complementary non-invasive tests, perioperative risk stratification becomes much more efficient²². Cardiological evaluation is recommended for those patients whose results implement changes in the perioperative and intraoperative management that could optimize the prognosis, aiming to reduce the risk of cardiac events in this period as well as in the late postoperative period²³. This view, although apparently contradictory, is essential in PC patients, as QoL with an effective management of symptoms is desired and, therefore, it is necessary

to preserve the organic function whenever possible. The occurrence of heart diseases in cancer patients is frequent. This is due to the fact that cardiovascular diseases and cancer are among the ten leading causes of death in Brazil in the last 20 years²⁴, in addition to the fact that some treatments for cancer are related to cardiotoxicity and impairment of the hematopoietic system²⁴. Among the recommended protocols for cardiological evaluation in patients undergo-

ing non-cardiac surgeries, we can mention Lee Goldman's ones^{26,27}, which evaluates clinical, electrocardiographic and surgical criteria¹⁷.

As the disease progresses and the worse the tumor stage, the patient's health conditions tend to deteriorate²⁸. This can happen due to the pathophysiological process of cancer itself, with consequent impacts on the preoperative ASA classification (Table 1), which is directly related to

Table 1. Current Definitions and ASA-Approved Examples.

ASA PS Classification	Definition	Adult Examples, Including, but not Limited to:	Pediatric Examples, Including but not Limited to:	Obstetric Examples, Including but not Limited to:
ASA I	A normal healthy patient	Healthy, non-smoking, no or minimal alcohol use	Healthy (no acute or chronic disease), normal BMI percentile for age	
ASA II	A patient with mild systemic disease	Mild diseases only without substantive functional limitations. Current smoker, social alcohol drinker, pregnancy, obesity (30<BMI<40), well-controlled DM/HTN, mild lung disease	Asymptomatic congenital cardiac disease, well controlled dysrhythmias, asthma without exacerbation, well controlled epilepsy, non-insulin dependent diabetes mellitus, abnormal BMI percentile for age, mild/moderate OSA, oncologic state in remission, autism with mild limitations	Normal pregnancy*, well controlled gestational HTN, controlled preeclampsia without severe features, diet-controlled gestational DM.
ASA III	A patient with severe systemic disease	Substantive functional limitations; One or more moderate to severe diseases. Poorly controlled DM or HTN, COPD, morbid obesity (BMI ≥40), active hepatitis, alcohol dependence or abuse, implanted pacemaker, moderate reduction of ejection fraction, ESRD undergoing regularly scheduled dialysis, history (>3 months) of MI, CVA, TIA, or CAD/stents.	Uncorrected stable congenital cardiac abnormality, asthma with exacerbation, poorly controlled epilepsy, insulin dependent diabetes mellitus, morbid obesity, malnutrition, severe OSA, oncologic state, renal failure, muscular dystrophy, cystic fibrosis, history of organ transplantation, brain/spinal cord malformation, symptomatic hydrocephalus, premature infant PCA <60 weeks, autism with severe limitations, metabolic disease, difficult airway, long term parenteral nutrition. Full term infants <6 weeks of age.	Preeclampsia with severe features, gestational DM with complications or high insulin requirements, a thrombophilic disease requiring anticoagulation.
ASA IV	A patient with severe systemic disease that is a constant threat to life	Recent (<3 months) MI, CVA, TIA or CAD/stents, ongoing cardiac ischemia or severe valve dysfunction, severe reduction of ejection fraction, shock, sepsis, DIC, ARD or ESRD not undergoing regularly scheduled dialysis	Symptomatic congenital cardiac abnormality, congestive heart failure, active sequelae of prematurity, acute hypoxic-ischemic encephalopathy, shock, sepsis, disseminated intravascular coagulation, automatic implantable cardioverter-defibrillator, ventilator dependence, endocrinopathy, severe trauma, severe respiratory distress, advanced oncologic state.	Preeclampsia with severe features complicated by HELLP or other adverse event, peripartum cardiomyopathy with EF <40, uncorrected/ decompensated heart disease, acquired or congenital.
ASA V	A moribund patient who is not expected to survive without the operation	Ruptured abdominal/ thoracic aneurysm, massive trauma, intracranial bleed with mass effect, ischemic bowel in the face of significant cardiac pathology or multiple organ/system dysfunction	Massive trauma, intracranial hemorrhage with mass effect, patient requiring ECMO, respiratory failure or arrest, malignant hypertension, decompensated congestive heart failure, hepatic encephalopathy, ischemic bowel or multiple organ/system dysfunction.	Uterine rupture.
ASA VI	A declared brain-dead patient whose organs are being removed for donor purposes			

*Although pregnancy is not a disease, the parturient's physiologic state is significantly altered from when the woman is not pregnant, hence the assignment of ASA 2 for a woman with uncomplicated pregnancy. The addition of "E" denotes Emergency surgery: (An emergency is defined as existing when delay in treatment of the patient would lead to a significant increase in the threat to life or body part).
Source: <https://www.asahq.org/standards-and-practice-parameters/statement-on-asa-physical-status-classification-system>

perioperative risk¹⁴. Other reasons for the worsening of the clinical conditions of these patients include a high probability of having comorbidities (such as heart disease, nephropathy, pneumopathies), serum-metabolic alterations (such as anemia, hypoalbuminemia, plasma sodium alterations), medication use (such as anticoagulants, analgesics and antidepressants), in addition to other preoperative vulnerabilities (malnutrition, cognitive changes, reduced mobility)^{29,30}. Often when we question cancer patients in PC, more importance is given to QoL in the postoperative period than to the number of life expectancy days, even though the latter is the most frequently cited data in the bibliography^{28,31}.

DISCUSSION

Preanesthesia evaluation of cancer patients undergoing palliative care should be performed every time they undergo elective anesthetic procedures, preferably on an outpatient basis prior to hospitalization. This helps the anesthesiologist to optimize the patients' clinical conditions so that they can safely undergo the procedure whenever the benefits of the surgery outweigh the risks¹⁴. It should be noted that time is an important variable for these patients with a direct impact on their QoL. Palliative interventions can reduce the use of health services and improve the quality of palliative care planning without increasing mortality rates^{13,32}.

The conventional treatment of oncological diseases, such as chemotherapy, radiotherapy, brachytherapy, immunotherapy and hormone therapy, can also impact the patient's general health³³. Adverse effects of special interest for the preoperative functional classification include hydro-electrolytic alterations, blood dyscrasias, complications at the sites of anesthesia application, anatomical alterations that hinder blockages and airway establishment, development of hypersensitivity to drugs, depression of organic function, impairment of the immune system, changes in blood clotting, healing disorders³⁴⁻⁴². It is important to observe the occurrence of febrile neutropenia in the periods preceding an elective surgery, due to the increased risk of bacterial and/or fungal infection and sepsis. Therefore, the measurement and recording of body temperature and a blood count collected in the immediate preoperative period are essential in patients undergoing chemotherapy^{32,43}.

Faced with such a variety of signs and symptoms observed in cancer patients, it is important to carry out a careful preanesthesia evaluation. During the anamnesis, special attention should be given not only to the oncological diagnosis and the proposed procedure, but also to associated pathologies, the use of continuous medication, previous and current treatments related to the tumor, possible sequelae, presence of metastases, previous anesthetic procedures and

possible complications, addictions, allergies, acceptance or not of transfusion of blood and/or blood products, personal considerations by the patient about their wishes, autonomy, living will, order of non-resuscitation and informed consent^{43,44}.

A careful physical examination must be performed, respecting the limitations of the patient. Information such as state of consciousness, weight, nutritional status, color of the skin and mucous membranes, prediction of difficult airway management and difficulty in establishing venous access, anatomical alteration that affects the performance of central or peripheral blocks and impairment of organs and systems must be observed and described in the medical record⁴⁵. All this is more likely to be present in these patients due to the pathological process of the disease and its particularities. Complementary exams may be necessary, and their request must be individualized for each patient and proposed surgical procedure^{46,47}.

During academic training, we are introduced to a range of instruments for measuring health and functionality which help us in assessing the prognosis. The preanesthesia evaluation is a way of gathering data about the patient that, properly interpreted, stratifies perioperative and intraoperative risks, as well as contributing to the prevention of and coping with possible interurrences. In the case of PC patients, when there is the possibility of procedures to control symptoms, QoL is highly valued, especially in the ephemeral period following the procedure⁴⁸. Therefore, an instrument that takes into account health aspects valued by these patients related to autonomy, absence of physical pain, interpersonal relationships, quality of dying, preservation of cognition and mobility and self-care, among others, should be valued⁴⁹. The World Health Organization (WHO) developed an instrument that provides a standardized model for measuring such qualities highly valued by these patients, the World Health Disability Assessment Schedule (WHODAS 2.0). This can be used in decision-making processes involving risks and benefits in cancer patients requiring palliative procedures³³.

PC patients present a variety of symptoms that deserve special attention. Holistic care for those symptoms comprising the biopsychosocial spheres should ideally be provided by a multidisciplinary team. Among these, we can include psychological reception and the chaplaincy service, physiotherapy for patients who are often bedridden, the support of the nursing team with wounds, the help of social assistance and the nutrition team with the consequences of the treatment, among others. The anesthesiologist is a key professional in conducting the perioperative process⁵⁰. This professional assists in tasks involving patient care, procedure safety, risk and cost reduction^{14,19}. As a member of a hospital

multidisciplinary team, the anesthesiologist adds invaluable gains to the health management of these patients⁵¹.

Palliative procedures comprise 13% of all surgeries performed in the United States, and 21% of oncological surgeries, totaling a thousand procedures per year in that country⁵². Professionals who work with PC help these patients with physical, psychosocial and spiritual care for the prevention and relief of suffering⁴⁹. Adequate patient guidance helps control peri- and trans-operative anxiety with a consequent reduction in morbidity⁵⁰.

Anesthesiologists are in a privileged position to alleviate suffering. They have the necessary tools not only to control analgesia but also other symptoms that frequently occur in PC patients, such as dyspnea, anxiety, delirium and nausea. During the preanesthesia evaluation these professionals can contribute to the discussion of the care plan for eventual interurrences that may occur in the peri- and intraoperative periods. Despite being a subject that many avoid addressing, knowing the position of the patient and family on issues that involve their own choice in an autonomous and conscious way is a form of respect and care^{53,54}. Such decisions, which include blood transfusion and blood products, a do-not-resuscitate order, clarification of invasive procedures and place of care in the period following the procedure, must be described in the medical record.

The Brazilian CFM's resolution n° 2174¹⁰ also determines that the duty to obtain a patient's informed consent rests on the anesthesiologist. The informed consent must contain information in clear and accessible language about explanations, advantages, disadvantages and risks associated with the anesthetic procedure and must be signed and dated by the subject or the subject's legally authorized representative. The term of consent assures patients the right to make a decision and express their free will to consent or not with the proposed procedure, since the main absolute contraindication to the anesthetic procedure is their refusal⁴⁶.

CONCLUSION

Palliative surgery in patients with cancer aims at non-curative procedures, but improving the symptoms caused by the tumor⁷. Improving quality of life without aggravating morbidity and mortality is an expected objective, however, an increase in life expectancy does not always occur. Although these patients have higher risks^{12,13} due to the increased number of existing comorbidities, as well as the degenerative process caused by the pathology and its treatment, there are several factors that influence decision-making in terms of the care provided. Any recommendation given to patients regarding risks, benefits, expected occurrences and possible

interurrences must be attentive, since their decision must be joint and respectful.

In the SciELO, Lilacs, ScienceDirect and Pubmed databases, more than 50 thousand scientific papers were found, which reinforces the importance of perioperative care by the anesthesiology team in order to reduce the morbidity and mortality of cancer patients undergoing palliative procedures. As part of a multidisciplinary team, the anesthesiologist plays a fundamental role in the active search for attitudes that raise awareness of the patient's quality of life. This theme has been discussed in Brazil and worldwide, repeatedly, in different scenarios and over the years, thus showing the relevance of the subject and the need for updates insofar as cultural and social changes inevitably recur. Both in the scientific literature and in the State legislation of our country publications on the subject are frequent.

In order to optimize perioperative outcomes, careful evaluation based on scientific and technical knowledge, increased awareness of the World Health Organization's definitions and guiding practices on PC, and respect for the principles of the Unified Health System regarding universality, equity and comprehensiveness of health should be the guiding principles in developing management strategies for cancer patients undergoing palliative procedures.

REFERENCES

1. Ministério da Saúde (Brasil). Diretrizes para o cuidado de pessoas com doenças crônicas nas redes de atenção à saúde e nas linhas de cuidado prioritário. Brasília(BR): Ministério da Saúde; 2013. Available from: http://189.28.128.100/dab/docs/portaldab/publicacoes/diretrizes_doencas_cronicas.pdf
2. Agência Brasil. IBGE: pelo menos uma doença crônica afetou 52% dos adultos em 2019. 2020 November 18. [cited 2022 May 05]. Available from: <https://agenciabrasil.ebc.com.br/saude/noticia/2020-11/ibge-pelo-menos-uma-doenca-cronica-afetou-52-dos-adultos-em-2019>
3. Rezende EM, Sampaio IBM, Ishitani LH. Causas múltiplas de morte por doenças crônico-degenerativas: uma análise multidimensional. *Cad Saúde Pública*. 2004;20(5):1223-31. <https://doi.org/10.1590/S0102-311X2004000500016>
4. Ministério da Saúde (Brasil). A situação do câncer no Brasil. 1a. Ed. Rio de Janeiro(BR): INCA; 2006. Available from: https://bvsmis.saude.gov.br/bvs/publicacoes/situacao_cancer_brasil.pdf
5. Bastos LOA, Andrade EN, Andrade EO. Relação médico-paciente na oncologia: estudo a partir da perspectiva do paciente. *Rev Bioét*. 2017;25(3):563-76. <https://doi.org/10.1590/1983-80422017253213>
6. Caprara A, Franco ALS. Relação médico-paciente e humanização dos cuidados em saúde: limites, possibilidades, falácias. In: Deslandes SF (comp.). *Humanização dos cuidados em saúde: conceitos, dilemas e práticas*. Rio de Janeiro(BR): FIOCRUZ; 2006. p. 85-108. Available from: <https://books.scielo.org/id/sq6d8/pdf/deslandes-9788575413296-05.pdf>
7. Gomes ALZ, Othero MB. Cuidados paliativos. *Estud Av*. 2016;30(88): 155-66. <https://doi.org/10.1590/S0103-40142016.30880011>.
8. World Health Organization. *Cancer Control: Knowledge Into Action: WHO Guide for Effective Programmes: Module 4: Diagnosis and Treatment*. Geneva(CH): World Health

- Organization; 2008. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK179046/>
9. Hanna NN, Bellavance E, Keay T. Palliative Surgical Oncology. *Surg Clin North Am*. 2011 Apr;91(2):343-53. <https://doi.org/10.1016/j.suc.2010.12.004>
 10. Conselho Federal de Medicina (Brasil). Resolução CFM nº 2174, de 14 de dezembro de 2017. Dispõe sobre prática do ato anestésico e sobre consentimento livre e esclarecido. [cited 2022 March 28]. Available from: <https://sistemas.cfm.org.br/normas/visualizar/resolucoes/BR/2017/2174>
 11. Liu Y, Lu H, Wang W, Liu Q, Zhu C. Clinical risk factors for mortality in patients with cancer and COVID-19: a systematic review and meta-analysis of recent observational studies. *Expert Rev Anticancer Ther*. 2021 Jan;21(1):107-119. <https://doi.org/10.1080/14737140.2021.1837628>
 12. Badgwell B, Smith K, Liu P, Bruera E, Curley SA, Cormier JN. Indicators of surgery and survival in oncology inpatients requiring surgical evaluation for palliation. *Support Care Cancer*. 2009 Jun;17(6):727-34. <https://doi.org/10.1007/s00520-008-0554-6>
 13. Furigo FL. Impacto da avaliação pré-anestésica ambulatorial no perioperatório do paciente oncológico. [dissertation] São Paulo(BR): Fundação Antônio Prudente; 2017. Available from: <https://accamargo.phlnet.com.br/MESTRADO/2017/FernandaLFurigo/FernandaLFurigo.pdf>
 14. Committee on Standards and Practice Parameters; Apfelbaum JL, Connis RT, Nickinovich DG; American Society of Anesthesiologists Task Force on Preanesthesia Evaluation; Pasternak LR, et al. Practice advisory for preanesthesia evaluation: an updated report by the American Society of Anesthesiologists Task Force on Preanesthesia Evaluation. *Anesthesiology*. 2012 Mar;116(3):522-38. <https://doi.org/10.1097/aln.0b013e31823c1067>
 15. Miner TJ. Palliative surgery for advanced cancer: lessons learned in patient selection and outcome assessment. *Am J Clin Oncol*. 2005 Aug;28(4):411-4. <https://doi.org/10.1097/O1.coc.0000158489.82482.2b>
 16. Conselho Federal de Medicina (Brasil). Resolução CFM nº 1802, de 01 de novembro de 2006, retificada em 20 de dezembro de 2006. Recomenda a avaliação pré-anestésica ambulatorial e condições mínimas para a realização do ato anestésico. [cited 2022 March 28]. Available from: https://sistemas.cfm.org.br/normas/arquivos/resolucoes/BR/2006/1802_2006.pdf
 17. Goldman L, Caldera DL, Nussbaum SR, Southwick FS, Krogstad D, Murray B, et al. Multifactorial index of cardiac risk in noncardiac surgical procedures. *N Engl J Med*. 1977 Oct 20;297(16):845-50. <https://doi.org/10.1056/nejm197710202971601>
 18. McCahill LE, Krouse RS, Chu DZ, Juarez G, Uman GC, Ferrell BR, Wagman LD. Decision making in palliative surgery. *J Am Coll Surg*. 2002 Sep;195(3):411-22. [https://doi.org/10.1016/s1072-7515\(02\)01306-6](https://doi.org/10.1016/s1072-7515(02)01306-6)
 19. Fleisher LA. Preoperative evaluation – Can we really make a difference in outcomes? *Anesthesiol Clin*. 2016; 34(1):13-4. <https://doi.org/10.1016/j.anclin.2015.12.002>
 20. Ortenzi AV. Avaliação pré-anestésica. In: Cangiani LM, Carmona MJC, Torres MLA, Bastos CO, Ferez D, Silva ED, Duarte LTD, Tardelli MA, editors. *Tratado de Anestesiologia SAESP*. 7th. ed. São Paulo(BR): Editora Atheneu; 2011. p. 1299-322.
 21. Gerlach R, Sweitzer BJ. Avaliação e medicação pré-anestésica. In: Junior MCP, Miller RD. *Bases da Anestesia*. 7th. ed. Rio de Janeiro: Elsevier; 2019. p. 186-212.
 22. Almanaseer Y, Mukherjee D, Kline-Rogers EM, Kesterson SK, Sonnad SS, Rogers B, et al. Implementation of the ACC/AHA guidelines for preoperative cardiac risk assessment in a general medicine preoperative clinic: improving efficiency and preserving outcomes. *Cardiology*. 2005;103(1):24-9. <https://doi.org/10.1159/000081848>
 23. Halvorsen S, Mehilli J, Cassese S, Hall TS, Abdelhamid M, Barbato E, et al. 2022 ESC Guidelines on cardiovascular assessment and management of patients undergoing non-cardiac surgery. *Eur Heart J*. 2022 Oct 14;43(39):3826-924. <https://doi.org/10.1093/eurheartj/ehac270>
 24. Ministério da Saúde (Brasil). Saúde Brasil 2018 – Uma análise da situação de saúde e das doenças e agravos crônicos: desafios e perspectivas. Brasília(BR): Ministério da Saúde; 2019. https://bvsms.saude.gov.br/bvs/publicacoes/saude_brasil_2018_analise_situacao_saude_doencas_agravos_cronicos_desafios_perspectivas.pdf
 25. Mann DL, Krone RJ. Cardiac disease in cancer patients: an overview. *Prog Cardiovasc Dis*. 2010 Sep-Oct;53(2):80-7. <https://doi.org/10.1016/j.pcad.2010.05.004>
 26. Fleisher LA, Beckman JA, Brown KA, Calkins H, Chaikof E, Fleischmann WK, Freeman WK, et al. ACC/AHA 2007 Guidelines on Perioperative Cardiovascular Evaluation and Care for Noncardiac Surgery: Executive Summary. *J Am Coll Cardiol*. 2007; 50(17):1707-32. <https://doi.org/10.1016/j.jacc.2007.09.001>
 27. Poldermans D, Bax JJ, Boersma E, De Hert S, Eeckhout E, Fowkes G, et al. Guidelines for pre-operative cardiac risk assessment and perioperative cardiac management in non-cardiac surgery. *Eur Heart J*. 2009 Nov;30(22):2769-812. <https://doi.org/10.1093/eurheartj/ehp337>
 28. Lilley EJ, Cooper Z, Schwarze ML, Mosenthal AC. Palliative Care in Surgery: Defining the Research Priorities. *Ann Surg*. 2018 Jan;267(1):66-72. <https://doi.org/10.1097/SLA.0000000000002253>
 29. Shulman MA, Myles PS, Chan MT, McIlroy DR, Wallace S, Ponsford J. Measurement of disability-free survival after surgery. *Anesthesiology*. 2015 Mar;122(3):524-36. <https://doi.org/10.1097/ALN.0000000000000586>
 30. Stix G. A malignant flame. Understanding chronic inflammation, which contributes to heart disease, Alzheimer's and a variety of other ailments, may be a key to unlocking the mysteries of cancer. *Sci Am*. 2012 [reprint 2008];18(3):48-55. <https://doi.org/10.1038/scientificamerican0708-48sp>
 31. Hermes HR, Lamarca ICA. Cuidados paliativos: uma abordagem a partir das categorias profissionais de saúde. *Ciênc Saúde Coletiva* [online]. 2013;18(9):2577-88. <https://doi.org/10.1590/S1413-81232013000900012>
 32. Farina A. Prontuário médico. Portal CFM. 1999 November 29. [cited 2022 May 15]. Available from: <https://portal.cfm.org.br/artigos/prontuario-medico/>
 33. Organização Mundial de Saúde. Manual do WHO Disability Assessment Schedule. Uberaba(BR): Universidade Federal do Triângulo Mineiro; 2010. Available from: https://apps.who.int/iris/bitstream/handle/10665/43974/9788562599514_por.pdf;sequence=1
 34. Iwamoto T. Clinical application of drug delivery systems in cancer chemotherapy: review of the efficacy and side effects of approved drugs. *Biol Pharm Bull*. 2013;36(5):715-8. <https://doi.org/10.1248/bpb.b12-01102>
 35. Partridge AH, Burstein HJ, Winer EP. Side effects of chemotherapy and combined chemohormonal therapy in women with early-stage breast cancer. *J Natl Cancer Inst Monogr*. 2001;(30):135-42. <https://doi.org/10.1093/oxfordjournals.jncimonographs.a003451>
 36. Barazzuol L, Coppes RP, van Luijk P. Prevention and treatment of radiotherapy-induced side effects. *Mol Oncol*. 2020 Jul;14(7):1538-1554. <https://doi.org/10.1002/1878-0261.12750>
 37. Kroschinsky F, Stölzel F, von Bonin S, Beutel G, Kochanek M, Kiehl M, Schellongowski P; Intensive Care in Hematological and Oncological Patients (iCHOP) Collaborative Group. New drugs, new toxicities: severe side effects of modern targeted and immunotherapy of cancer and their management. *Crit Care*. 2017 Apr;21(1):89. <https://doi.org/10.1186/s13054-017-1678-1>
 38. Cukier P, Santini FC, Scaranti M, Hoff AO. Endocrine side effects of cancer immunotherapy. *Endocr Relat Cancer*. 2017 Dec;24(12):T331-47. <https://doi.org/10.1530/erc-17-0358>

39. Nurgali K, Jagoe RT, Abalo R. Editorial: Adverse Effects of Cancer Chemotherapy: Anything New to Improve Tolerance and Reduce Sequelae? *Front Pharmacol*. 2018 Mar;9:245. <https://doi.org/10.3389/fphar.2018.00245>
40. Peddie N, Agnew S, Crawford M, Dixon D, MacPherson I, Fleming L. The impact of medication side effects on adherence and persistence to hormone therapy in breast cancer survivors: A qualitative systematic review and thematic synthesis. *Breast*. 2021 Aug;58:147-59. <https://doi.org/10.1016/j.breast.2021.05.005>
41. Beuth J, Van Leendert R, Pempelfort K, Schneider B, Grund C, Engelmann U. Complementary medicine down-regulates side-effects of hormone therapy in prostate cancer patients. *In Vivo*. 2014 Sep-Oct;28(5):979-82
42. Bellesso M, Costa SF, Chamone DAF, Llacer PED. Triagem para o tratamento ambulatorial da neutropenia febril. *Rev Bras Hematol Hemoter*. 2010;32(5):402-8. <https://doi.org/10.1590/S1516-84842010000500014>
43. Kovács MJ. Bioética nas questões da vida e da morte. *Psicol USP*. 2003;14(2):115-67. <https://doi.org/10.1590/S0103-65642003000200008>
44. Scott TH, Gavrin JR. Palliative surgery in the do-not-resuscitate patient: ethics and practical suggestions for management. *Anesthesiol Clin*. 2012 Mar;30(1):1-12. <https://doi.org/10.1016/j.anclin.2012.02.001>
45. Barbosa RAG, Simões CM. Anestesia para Radioterapia. In: Cangiani LM, Carmona MJC, Torres MLA, Bastos CO, Ferez D, Silva ED, Duarte LTD, Tardelli MA, editors. *Tratado de Anestesiologia SAESP*. 7th. ed. São Paulo(BR): Editora Atheneu; 2011. p. 2117-21.
46. Oliveira TR, Louzada LAL, Jorge JC. Raqui anestesia: prós e contras. *Rev Med Minas Gerais*. 2015; 25(4, Suppl 2):s28-35. <https://doi.org/10.5935/2238-3182.20150059>
47. Lassen CL, Aberle S, Lindenberg N, Bundscherer A, Klier TW, Graf BM, Wiese CH. Palliative patients under anaesthesiological care: a single-centre retrospective study on incidence, demographics and outcome. *BMC Anesthesiol*. 2015 Nov;15:164. <https://doi.org/10.1186/s12871-015-0143-4>
48. Kettler D, Nauck F. Palliative care and involvement of anaesthesiology: current discussions. *Curr Opin Anaesthesiol*. 2010 Apr;23(2):173-6. <https://doi.org/10.1097/ACO.0b013e328337331d>
49. Ministério da Saúde (Brasil). ABC do câncer: abordagens básicas para o controle do câncer. Rio de Janeiro(BR): Instituto Nacional do Câncer; 2011. Available from: https://bvsms.saude.gov.br/bvs/publicacoes/abc_do_cancer.pdf
50. Lemos MF, Lemos-Neto SV, Barrucand L, Verçosa N, Tibirica E. A informação no pré-operatório reduz a ansiedade pré-operatória em pacientes com câncer submetidos à cirurgia: utilidade do Inventário Beck de Ansiedade [Preoperative education reduces preoperative anxiety in cancer patients undergoing surgery: Usefulness of the self-reported Beck anxiety inventory]. *Braz J Anesthesiol*. 2019 Jan-Feb;69(1):1-6. <https://doi.org/10.1016/j.bjan.2018.07.003>
51. Fine PG. The evolving and important role of anesthesiology in palliative care. *Anesth Analg*. 2005 Jan;100(1):183-188. <https://doi.org/10.1213/01.ANE.0000141061.74294.de>
52. Krouse RS, Nelson RA, Farrell BR, Grube B, Juarez G, Wagman LD, Chu DZ. Surgical palliation at a cancer center: incidence and outcomes. *Arch Surg*. 2001 Jul;136(7):773-8. <https://doi.org/10.1001/archsurg.136.7.773>
53. Miner TJ, Brennan MF, Jaques DP. A prospective, symptom related, outcomes analysis of 1022 palliative procedures for advanced cancer. *Ann Surg*. 2004 Oct;240(4):719-26. <https://doi.org/10.1097/01.sla.0000141707.09312.dd>
54. Barnet CS, Arriaga AF, Hepner DL, Correll DJ, Gawande AA, Bader AM. Surgery at the end of life: a pilot study comparing decedents and survivors at a tertiary care center. *Anesthesiology*. 2013 Oct;119(4):796-801. <https://doi.org/10.1097/ALN.0b013e31829c2db0>