Psychological Aspects of the Phenomenon of the Phantom Limb in Cancer Patients Undergoing Amputation Surgery: Integrative Literature Review

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Aspectos Psicológicos do Fenômeno do Membro Fantasma em Pacientes Oncológicos Submetidos à Cirurgia de Amputação: Revisão Integrativa da Literatura

Aspectos Psicológicos del Fenómeno del Miembro Fantasma en Pacientes con Cáncer Sometidos a Cirugía de Amputación: Revisión Integradora de la Literatura

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ABSTRACT

Introduction: Many patients affected by bone and soft tissue tumors undergo amputation surgery and report the sensation and/or pain of the phantom limb. **Objective:** Identify, summarize and discuss studies on the psychological aspects of the phantom limb phenomenon in oncological patients who underwent amputation surgery. **Method:** Integrative review of the literature published in the last 25 years. Experimental studies, clinical trials and literature review were searched in the databases MEDLINE, LILACS and Embase. **Results:** Seven articles were selected for this review. Three studies established correlations between psychological factors and the occurrence of the phantom limb phenomenon after amputation, four addressed psychological and emotional aspects involved in the amputation surgery and psychological aspects involved in the phantom limb phenomenon, however, they did not establish relationships among them. Some authors defend the correlation between psychological aspects and the occurrence of the phantom limb phenomenon in amputee patients. Its neurophysiological explanation remains unknown to the scientific community. **Conclusion:** The phantom limb phenomenon can be influenced by psychological and emotional aspects caused by the illness and its treatment. Further studies about the phenomenon in cancer patients are necessary, especially about the psychological aspects, given its relevance in cancer care.

Key words: phantom limb/psychology; amputation; amputees/psychology; neoplasms.

RESUMO

Introdução: Entre os tipos de câncer existentes, estão os tumores ósseos e de tecidos moles. Muitos pacientes acometidos por essas neoplasias são submetidos à cirurgia de amputação e relatam a ocorrência da sensação e/ou dor do membro fantasma. **Objetivo:** Identificar, sintetizar e discutir estudos realizados acerca dos aspectos psicológicos do fenômeno do membro fantasma em pacientes oncológicos submetidos à cirurgia de amputação. **Método:** Revisão integrativa da literatura publicada nos últimos 25 anos. Realizou-se a busca de estudos experimentais, ensaios clínicos e revisões de literatura nas bases de dados MEDLINE, LILACS e Embase. **Resultados:** Foram selecionados sete artigos para compor esta revisão. Três estudos estabeleceram correlações entre os fatores psicológicos e a ocorrência do fenômeno do membro fantasma após a amputação, quatro abordam aspectos psicológicos e emocionais envolvidos na cirurgia de amputação e aspectos psicológicos envolvidos no fenômeno do membro fantasma, entretanto não estabeleceram relações entre eles. Alguns autores defendem a correlação entre os aspectos psicológicos e a ocorrência do fenômeno do membro fantasma em pacientes amputados. Sua explicação neurofisiológica ainda permanece desconhecida pela comunidade científica. **Conclusão:** O fenômeno do membro fantasma pode sofrer influências de aspectos psicológicos e emocionais provocados pelo adoecimento e seu tratamento. Ressalta-se a necessidade de mais pesquisas sobre o fenômeno em pacientes oncológicos, principalmente, no que refere aos seus aspectos psicológicos, dada a sua relevância no cuidado oncológico.

Palavras-chave: membro fantasma/psicologia; amputação; amputados/psicologia; neoplasias.

RESUMEN

Introducción: Entre los tipos de cáncer existentes se encuentran los tumores de huesos y tejidos blandos. Muchos pacientes afectados por estas enfermedades se someten a una cirugía de amputación y notifican la aparición de sensación y/o dolor en el miembro fantasma. **Objetivo:** Identificar y analizar estudios realizados sobre aspectos psicológicos del fenómeno del miembro fantasma en pacientes oncológicos sometidos a cirugía de amputación. **Método:** Revisión integradora de la literatura publicada en los últimos 25 años. La búsqueda de artículos se realizó en las bases de datos MEDLINE, LILACS y Embase. **Resultados:** Se seleccionaron siete artículos para componer esta revisión. Tres estudios establecen correlaciones entre factores psicológicos y la ocurrencia del fenómeno del miembro fantasma después de la amputación, cuatro abordan aspectos psicológicos y emocionales involucrados en la cirugía de amputación y aspectos psicológicos involucrados en el fenómeno del miembro fantasma, sin embargo, no establecen relaciones entre ellos. Algunos autores defienden la correlación entre los aspectos psicológicos y la ocurrencia del fenómeno del miembro fantasma en pacientes amputados. La explicación neurofisiológica sigue siendo desconocida para la comunidad científica. **Conclusión:** El fenómeno del miembro fantasma puede verse influido por aspectos psicológicos y emocionales provocados por la enfermedad y su tratamiento. Se destaca la necesidad de profundizar en la investigación del fenómeno en pacientes oncológicos, especialmente en sus aspectos psicológicos, dada su relevancia en la atención oncológica.

Palabras clave: miembro fantasma/psicología; amputación; amputados/psicología; neoplasias.

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INTRODUCTION

The current epidemiological profile of cancer in Brazil emphasizes its relevance as a problem and accountability of public health. For each year of the triennium 2020-2022 it is anticipated that 625,000 new cases of cancer will be diagnosed[1]. Cancer comprehends more than 100 diseases characterized by the uncontrolled growth of abnormal cells that can infiltrate tissues and organs, tend to be aggressive and may cause tumors. The variety of types of cancer corresponds to several groups of cells of the body. When originated from epithelial cells as skin or mucosa, they are called carcinoma, and in connective tissues as bone, muscle or cartilage, they are called sarcoma[2].

Bone tumors are rare when compared with other types of cancer, are more curable when diagnosed earlier and treated correctly[3]. The classification of this type of tumor considers its histology, the most common are osteosarcoma, chondrosarcoma and Ewing's sarcoma. Malignant fibrous histiocytoma, giant bone cell tumor and chordoma are also found. The main symptoms are increase of volume at the tumor site and pain, which can improve initially with analgesia. The symptoms can be understood as common lesions and there are asymptomatic cases which hamper the initial diagnosis[3,4]. The cause of bone tumor is still uncertain, it is believed that genetics and accidents causing lesions can be risk factors for its development[3].

The diagnosis of bone tumors is made through imaging as radiography, bone scintigraphy, tomography and magnetic resonance which evaluate whether the lesion is primary, secondary or metastatic and benign or malignant. Later, biopsy with the removal of a small fragment of the tumor for lab tests and finally, the histopathology and staging reveal the patient's clinical condition[4].

For being life-threatening, integrated actions of prevention and early detection are required for cancer control and management. Survivorship of patients affected by bone tumor and soft parts increased significantly after improvement of chemotherapy drugs efficacy and pre-treatment neoadjuvant treatment, directly impacting the disease-affected limb sparing[4]. However, when pharmacologic treatment alone is ineffective many patients can still submit to bone transposition, allograft, endoprosthesis, resection and amputation of the limb compromised. Indications of amputation are based in tumor location and extension. Patients submitted to this surgery as first alternative of treatment because of the extensive size of the tumor have more odds of metastasizing due to possible advanced stage of the disease. The health team can see amputation as the best management surgical option considering the significant risks of comorbidities resulting from conserving surgery and unfavorable functioning outcome[5,6]. However, in the first moment, many patients and their family tend to reject this alternative, because of the clear impairment it may cause, further to the emotional repercussions as body self-image, self-esteem, feeling of social and psychological well-being and satisfaction with the surgical outcome.

Nearly 80% of the individuals submitted to amputation surgery for diabetes, bone tumors, accidental traumas or generalized infections report the occurrence of the phantom limb sensation after the procedure[7]. This phenomenon is characterized by the experience of the perception of the missing limb which behaves similarly to the actual limb, can manifest sensations as pain, numbness, tingling, burning, grip, compression, crumps, twinge and vivid illusion of movement. It can be transitory, vague and with paresthesia and occur immediately post-surgery and weeks, months or years later. Many patients do not report the occurrence of phantom pain fearing to be considered mentally ill and do not reveal their symptoms which contributes for sub-notification of incidence and prevalence[7,8].

The experience of the phantom limb can be understood as result of the interaction of several neuronal effects. Internal stimuli as attention, emotion and autonomous reflects and external as touch or pressure in the stump, temperature shift, pain of another origin and recent prosthesis can aggravate the phantom pain. Rest, distraction, movements and massage in the stump and continuous use of prosthesis can relief pain. Possible neurophysiological explanation is cortical overlap to the adjacent areas. The cortical organization is modified after some sensorial loss and with this, the areas, earlier activated by the amputated limb start to be invaded by neurons of unchanged areas whose representation were close in the cortex. With the loss of sensorial intervention of a region or amputation of the limb, the peripheral sensorial information become absent and consequently, the neurons of the central nervous system which received information from that part of the body become hyperactive[8].

Many sensorial information are related to specific areas of the post-central cortex enabling the elaboration of sensorial maps and, consequently the formation of the body image which is constructed from the perceptions and emotions about the body and experiences lived and can shift constantly. With this, it is anticipated that the phantom limb of the amputee would be the reactivation of a perceptive pattern before the surgical procedure stimulated by emotional aspects[8].

Flor[7] affirms that apparently psychological aspects as emotional stress do not contribute for the pain of the

phantom limb in itself but can interfere in the course and intensity. It is hypothesized that the phantom limb phenomenon is associated with unresolved bereavement of the loss of the limb and could be a psychosomatic manifestation of a pre-morbid personality. However, studies about the characteristics of the patients who feel pain in phantom limb and the control group show that these tend to have psychological profiles considered normal. Cognitive factors also play important role in the modulation of the pain of the phantom limb; patients who have dysfunctional coping strategies and fear the worst when challenged by pain episodes are more affected by pain when compared with patients with better coping strategies. Patients who receive less support in the moment prior to the surgery tend to report more pain when compared with those who receive support and help. It is possible to surmise also that remembrances of pain established prior to the amputation are strong signs of pain of the phantom limb. Amputations caused by cancer or traumas are more propense to trigger the phantom pain than amputations by congenital causes[9].

According to Demidoff et al.[8], unconsciously, the patients who had more difficulty to accept the new condition of life, keep the early image of integrity of the body. The phenomenon of the phantom limb can be understood as an interaction between what is detected physically by the body and what the mind integrates. As the individual is accustomed to have a full body, the phantom limb is the manifestation as an expression of a possible difficulty in adapting to the new body reality. In addition, the brain cortex still has an area of sensorial representation of the amputated region, blocking the cessation of the body sensations[8].

For this author, the phenomenon of the phantom limb is characterized by physiologic and psychological factors that work concomitantly in its occurrence[8]. The rehabilitation of the amputee patient should rely on a multidisciplinary team formed by physicians, nurses, physiotherapists, psychologists and occupational therapists ensuring full care[10]. The action of the psychologist aims to manage the psychological impact the loss of the limb can cause in the life of the patient, help its adaptation to the new reality and deal with the subsequent emotional difficulties, since the amputee can still feel apart from the rest of the society and belonging to a stigmatized group[11]. Horgan and MacLachlan[12] point out that the prejudice felt by the amputee can cause uneasiness and potential non-achievement of its social activities. The sensation of social isolation and stigma appear from the perception of discrimination by the physical condition provoked by the amputation. If the amputation occurs because of an oncological disease as bone tumor or soft tissues there is a double stigma both due to the amputation and cancer, contributing for the individual to pull away from the social roles, relationships with other persons and quite often, hampering its adherence to the treatment.

Great is the fear of cancer because it means the possibility of invalidity, disfiguring, prolonged suffering and mainly death, creating the feeling of anguish in the patients and their families. It resounds still in the society the belief that cancer is the 'cursed disease' bringing negative connotations when compared with other infirmities[13]. When associated with the necessity of an amputation, this fear and stigmas can be potentialized.

This article aims to identify, synthesize and discuss the results of experimental studies, clinical trials and literature reviews about psychological aspects related to the occurrence of the phantom limb phenomenon in oncologic patients submitted to amputation surgery.

METHOD

Integrative review of the literature developed in six stages: 1. elaboration of the research question; 2. literature searching; 3. data collection; 4. critical analysis of studies selected for inclusion; 5. discussion of the results; 6. presentation of the integrative review[14].

It was conducted between January 2020 and January 2021 and the research question was based in the PCC strategy (Population: oncologic patients; Context: submitted to amputation surgery; Concept: psychological aspects and phantom limb phenomenon): "Is there relation between psychological aspects and phantom limb phenomenon in oncologic patients submitted to amputation surgery?". The databases MEDLINE, LILACS and Embase were searched with the descriptors: psycho-oncology; phantom limb; neoplasms of soft tissues, neoplasms of connective and soft tissues, neoplasms of bone tissue, neoplasms of connective tissue, neoplasms, amputation and its correspondents in English and Spanish according to the Health Sciences Descriptors (DeCS); Boolean operators OR and AND were utilized as search strategy for the last 25 years (1995-2020) to find more studies for the review.

The inclusion criteria were: 1) amputations resulting from oncologic neoplasms of the connective and soft tissues; 2) description of the sensation of phantom limb pain; 3) discussion about psychological aspects; 4) studies with adults; 5) experimental studies, clinical trials, experience reports, case reports, observation studies and literature reviews. Duplicate articles not available in full, addressing amputations for non-oncologic reasons and with children and adolescents were excluded.

RESULTS

219 articles were found in the initial search, 204 of which were excluded for not addressing the oncological phantom limb or for not discussing psychological aspects. Later, 17 studies were selected for reading abstracts according to inclusion and exclusion criteria. After abstracts reading, duplicate and unavailable in full were discarded, remaining 10 studies. Ultimately, seven articles were selected for review. (Figure 1).

Mostly, 6 were international studies, 6 by physicians and 1 by physiotherapists. Three established correlations between postamputation psychological factors and phantom limb phenomenon, four, emotional and psychological aspects involved in amputation, however, no relation among them was found.

Chart 1 shows the results.

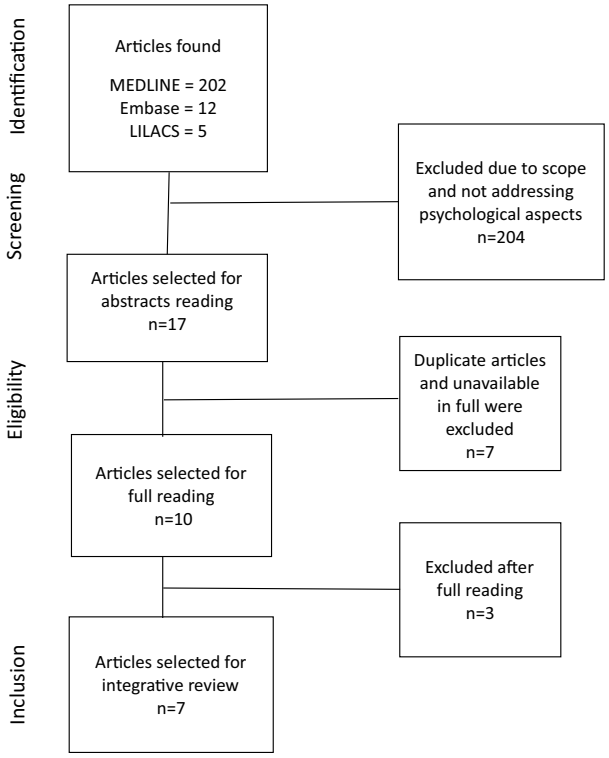

Figure 1. Selection of articles

DISCUSSION

Management of psychological aspects of amputation and sensation of phantom limb

In the study of Tomeno et al.[15], the importance of managing the psychological aspects of the patient is pointed out when the necessity of amputation and in post-operation to facilitate acceptance and possible prevention of phantom pain is brought up. The authors[15] recommend an interval of a few days or weeks between the notice of amputation and the surgery if circumstances allow. The patient should have time to find himself the resources for a voluntary consent to the operation. It should be explained to the patient the possibility of the phantom limb sensation as a preventive measure for its occurrence. Additionally, the authors[15] affirm that the intensity of the phantom limb pain can vary in each patient and is strongly influenced by psychological aspects. An amputation that is poorly advised, poorly accepted and poorly experienced is far more liable to frank and persistent painful syndromes. The essential factor in prevention of phantom limb pain is treatment with psychotropic agents because of analgesic and anxiolytic effect further to the psychologic context of amputation.

In their study, Probstner et al.[17] showed the unawareness about the physiopathology of the phantom pain. Nevertheless, they indicate the development of clinical and experimental trials and theories involving several mechanisms of the central and peripheral nervous system as possible explanations for the phenomenon associated with psychological factors too. Therapeutic management of the phantom limb has three modalities that can occur concomitantly or separately: pharmacological, support and surgical. Pharmacological treatment uses medications as tricyclic antidepressants, sodium channels blockers, anticonvulsants, anesthetics, calcitonin, opioids and non-steroid anti-inflammatories; non-invasive support medications include transcutaneous electric nervous stimulation, vibration therapy, acupuncture, hypnosis and biofeedback. Surgical management is less prescribed due to unsatisfactory results and includes stump revision surgery or neurectomy, dorsal root entry zone (DREZ) lesions, cordotomy, thalamotomy and sympathectomy[21].

In a study[21] of the National Cancer Institute José Alencar Gomes da Silva (INCA) with 75 oncologic patients submitted to amputation, 35 participants reported phantom limb pain (46.7%). Of these, more than half received some type of treatment but 88.6% did not receive any kind of psychological treatment which only 4 did. For two patients the symptoms persisted. Most of them reported the sensation of phantom limb with some modality of intervention, but only four had psychological support and the symptom improved in 21 patients (30.1%).

Therefore, the majority who submitted to psychologic treatment had significant improvement of phantom limb pain sensation. The authors have also found sub-utilization of psychological support and follow up justified by the embedded concept that this kind of treatment should be prescribed only when strong mood shifts are noticed, which reinforces the necessity of offering psychology

Chart 1. Articles included in the review

Author/year/ Country	Title	Objective	Methodology	Results
Ottaviani et al., 2009[5] USA	Functional, psychosocial and professional outcomes in long-term survivors of lower-extremity osteosarcomas: amputation versus limb salvage	Collect data of functioning outcomes and quality of life post-treatment of lower limb osteosarcoma with two main surgical options, amputation or limb salvage	Literature review	Does not determine direct causal relation between psychological aspects and phantom limb phenomenon
Tomeno et al., 1998[15] France	Psychological management, prevention and treatment of phantom pain after amputations for tumors	Analyze psychological aspects involved in the phantom limb phenomenon, treatment and prevention	Report of experience	Pain intensity is influenced by psychological aspects involved in the amputation. It can be prevented with the administration of psychotropics. Emphasize the importance of psychological management
Wittig et al., 2001[16] USA/Israel	Palliative forequarter amputation for metastatic carcinoma to the shoulder girdle region: indications, preoperative evaluation, surgical technique, and results	Describe indications for palliative forequarter amputation, assessment of surgical technique and clinical outcome	Retrospective analysis	Patients experienced pain relief, improved mobility and overall function. There were no instances of phantom limb pain or adverse psychological reactions, and no complications related to perioperative analgesia.
Probstner et al., 2010[17] Brazil	Phantom limb phenomena in cancer amputees	Determine the prevalence of phantom pain and correlated conditions such as phantom sensations and stump pain in a population of cancer patients who had undergone limb amputation.	Cross-sectional study	Pain and phantom sensation are highly prevalent in oncologic patients. Sub-utilization of psychology services was detected
Furtado et al., 2015[18] United Kingdom	Physical functioning, pain and quality of life after amputation for musculoskeletal tumours: a national survey	Describe patient-reported outcomes including physical functioning, pain and QoL after amputation for sarcoma; compare outcomes by amputation level; investigate relationships between measures; compare outcomes with published series	Cross-sectional study	Patients with more proximal amputations have poorer levels of physical function, use their prosthetic limb less and are more reliant on walking aids, but have similar QoL and pain scores, regardless of the level of amputation

to be continued

Chart 1. continuation

Author/year/ Country	Title	Objective	Methodology	Results
Ahmed et al., 2017[19] India	Prevalence of phantom limb pain, stump pain, and phantom limb sensation among the amputated cancer patients in India: a prospective, observational study	Quantify the prevalence of pain and sensation of phantom limb and stump pain in amputee oncologic patients	Observational prospective study	Higher prevalence of phantom limb sensation among patients with history of pre-amputation and post-operation complications. High prevalence of depression in patients with phantom pain and moderate in patients with phantom sensation
Bornemann--Cimenti et al., 2017[20] Austria	Early onset and treatment of phantom limb pain following surgical amputation	Investigate and report pain in the phantom limb in immediate amputation post-operation	Qualitative study (case report)	Genetic and psychosocial factors may contribute for phantom limb phenomenon. Pre-amputation pain as possible prediction of phantom limb

consultation to the these patients since the psychologist must accompany the oncologic treatment in all its phases, beginning in the diagnosis and going through treatment difficulties until the elaboration of functional coping strategies of stress and fear[22].

Ahmed et al.[19] found more incidence of pain and phantom limb sensation in patients with pain in pre-operation and post-operation complications. In addition, there was prevalence of depression in patients with phantom limb pain and moderate prevalence in patients with phantom limb sensation. High prevalence of phantom limb pain was detected in patients with sleeping disorders.

The importance of managing the psychological aspects associated with the amputation of oncologic patient is addressed in the studies of Tomeno et al.[15], Probstner et al.[17] and Ahmed et al.[19]. The authors affirm that the intensity of phantom pain can be influenced by psychological issues as non-acceptance of the surgery and comorbidities as depression. Flor[7] concurs with these authors and adds that phantom limb pain can be provoked by physical factors as temperature and pressure shifts in the stump and psychological as emotional stress caused by sickening and treatment.

Preoperative psychological follow-up is relevant to design functional coping strategies for the patient who will be amputated and psychoeducation for a potential phenomenon of phantom limb. The more informed the patient is about its sickening, treatment conducts and consequences, better the coping of the disease will be. However, the psychologist should not be limited to information but help the patient to elaborate the experience of sickening and resignify the process health-disease, ensuring active listening and welcoming along the course of the treatment[22]. It can also provide relief of the emotional symptoms as stress, fear, anxiety and in some cases, physical symptoms as pain triggered by emotional stress. Pain in oncologic patients is an important feature of the disease and quite often hard to control due to its multifactorial aspect[23].

Challenges of oncologic treatment at the national health system (SUS)

A patient treated at SUS faces structural problems which interfere in the diagnostic-treatment interval which quite often makes pain to last for a long period until care is provided. The National Policy of Oncologic Attention[10] determines that cancer combat actions involve preventive care beginning in primary attention and highly technological actions such as very complex modern diagnosis and treatments. Teston et al.[24] showed that the flow of the existing attention network for the oncologic patient is fragile and flawed because the patients have obstacles to access the health services offered. The oncologic pain may prolong because of specialized care delays after the treatment and favor the appearance of postoperative phantom pain as Bornemann-Cimenti et al.[20] and Wittig et al.[16] concluded.

Care should be organized within a flow of referral and counter-referral from basic attention which is the entry to the health public service and medium and high complexity procedures. The follow-up of the patient by a Family Health multi-disciplinary team in the course of the oncologic treatment through home-based visits, for instance, can contribute for better adherence to therapeutic conducts as well as sharing information about the full care process creating a space for the patient to tell his experience and feelings triggered by sickening[24].

Per the Guidelines of Attention to the Amputee[25], basic attention is not limited to prevention actions and promotion of health. Regardless of the amputation being performed at high complexity centers, a close relation with basic attention exists. Amputees should be consulted and followed-up at this level of attention and offered full care as medications, multiprofessional care and referral to other attention levels if needed[24]. In the study of Vargas et al.[26], the lack of referral to basic attention network is addressed, however, it should be the main follow-up service because of the proximity to the patient's residence and the actual necessities and difficulties the amputees can face. Marques and Stolt[27] have also pointed out the importance of continuous follow-up of these patients but recognize the difficulties of coping with the sensation and/or phantom pain because of poor knowledge about the phenomenon by the basic attention team further to non-homogenization of criteria and tools to define it and classify the different therapeutic responses[27].

Functional and psychosocial repercussions of amputation

The study of Ottaviani et al.[5] describes the functional and psychosocial repercussions of lower limbs submitted to amputation and/or salvage surgery. When compared to amputation, salvage limb surgery tends to bring psychologic benefit for esthetic reasons and partial or total keeping of the salvaged limb functioning. Potential late complications from the surgery as poor joint movement, nonunion of bone and endoprostheses failures may occur. Amputation would leave the patient with a lifelong requirement for prosthetics further to stump pain, bleedings and infections and sensation of phantom limb. Quality of life in terms of psychological and social aspects and endpoint achievements such as marriage and employment do not differ significantly between amputee and nonamputee. Functioning disorders and low scores of quality of life were associated with low education regardless of the type of surgery.

Furtado et al.[18] affirmed that physical impairments and limitations of activities of the daily life are the most significant sequelae of bone tumors and soft tissues. Psychological factors as emotional stress, depression, lack of motivation and anxiety and social issues as difficulties to return to a job or engage in a new assignment further to physical symptoms as pain and fatigue appear as well. The authors still pointed out the necessity of specialized rehabilitation programs, pain control and postamputation psychological support. Both studies, (Ottaviani et al.[5] and Furtado et al.[18]) address psychological aspects of oncologic patients and the sensation and/or phantom limb pain but correlations between the two factors were not established.

Bornemann-Cimenti et al.[20] addressed in their study that the essential mechanisms of the phantom limb process are found in peripheral, spinal and supraspinal levels and that genetic and psychosocial factors can also contribute. They report that pre-amputation pain episodes can foresee the development of postoperative phantom limb pain and advocate that the continuous administration of local anesthetics through peridural catheter facilitates pain management and may reduce the incidence of phantom limb pain.

In the study of Wittig et al.[16] eight patients who underwent palliative forequarter amputation for metastatic carcinoma in the scapula were analyzed retrospectively; all patients presented with severe and intractable pain and a useless extremity. In pre-operation, they had difficulties in performing their activities of the daily life because of intense pain, were sedentary, bed-ridden and depressive. After surgery, the patients did not report pain, were more active and their quality of life improved in addition to no phantom limb pain, absence of adverse effects and they attribute this positive outcome to perioperative appropriate analgesia.

Effects of pain control in phantom limb pain

Wittig et al.[16] emphasized the importance of perioperative pain control to reduce the risk of postoperative phantom pain, which is more incident in patients with prolonged pain in pre and immediate post-operation when compared to those who do not report pain. Perioperative analgesia can reduce the incidence and severity of phantom limb pain and the authors also affirm that it can be stronger in oncologic patients who underwent amputation and chemotherapy treatment when compared with non-oncologic triggered amputations.

The studies of Probstner et al.[17], Bornemann-Cimenti et al.[20] and Wittig et al.[16] highlight the pharmacological interventions to reduce postoperative phantom limb pain. Probstner et al.[17] add that the treatment should utilize the administration of tricyclic antidepressants, sodium channel blockers,

anticonvulsants, anesthetics, calcitonin, opioids and non-steroidal anti-inflammatories. Bornemann-Cimenti et al.[20] advocate the administration of local anesthetics through peridural catheter and Wittig et al.[16], the importance of perioperative pain management.

Psychological aspects and intensity of phantom limb phenomenon in oncologic patients submitted to amputation were proven to be closely related.

CONCLUSION

An integrative review of the literature was carried out about the psychological aspects of the phantom limb phenomenon in oncologic patients submitted to amputation. This phenomenon can be influenced by emotional and psychological aspects triggered by sickening and its treatment without proof that a causal relation between psychological factors and phantom limb exists. It became clear the importance of the patient follow up in the course of perioperative period, endeavoring to favor a better acceptance of the surgery and possible prevention of the phenomenon and contribute for significant improvement of physical and emotional symptoms. Studies concluded that these symptoms can be more intense if comorbidities are present as depression and sleeping disorders which can reinforce the possible relation between psychological factors and phantom limb phenomenon.

Psychological intervention is meant to manage the emotional and psychological impact the loss of a limb can cause as the stigma the society imposes to the amputee, in addition to adjusting to the new reality. More studies about the psychological aspects of this phenomenon are necessary, especially in oncology.

CONTRIBUTIONS

Betina Carnevale Nessimian contributed substantially for the study conception and/or design, acquisition, analysis and interpretation of the data, wording and critical review. Rosilene Souza Gomes contributed substantially for the acquisition, analysis and interpretation of the data, wording and critical review. Both authors approved the final version to be published.

DECLARATION OF CONFLICT OF INTERESTS

There is no conflict of interests to declare.

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