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**Jakub Piotr Husejko^{1,A,C-D}, Dominika Strzała^{1,B-C}, Anna Pokrzywa^{1,B-C}, Agata Wójcik^{1,B-C},
Hanna Cieluszek^{1,B-C}, Julia Tomys^{1,B-C}, Mariusz Kozakiewicz^{1,E-F}**

CARING FOR OBESE ELDERLY PATIENTS IN THE COURSE OF ONGOING INFLAMMATION

Opieka nad otyłymi pacjentami starszymi w trakcie toczącego się stanu zapalnego

¹Department of Geriatrics, Collegium Medicum of the Nicolaus Copernicus University, Polska

A - Koncepcja i projekt badania, B - Gromadzenie i/lub zestawianie danych, C - Analiza i interpretacja danych, D - Napisanie artykułu, E - Krytyczne zrecenzowanie artykułu, F - Zatwierdzenie ostatecznej wersji artykułu

Jakub Piotr Husejko – 0000-0002-9217-298X

Abstract (in Polish):

Wstęp

Mając na uwadze liczne wyzwania organizacyjne dotyczące opieki nad seniorami, istnieje potrzeba scharakteryzowania podstawowych i aktualnych zasad prowadzenia opieki nad nimi, uwzględniając ściśle określone stany chorobowe.

Materiały i Metody

Przeprowadzono analizę publikacji naukowych z lat 2004-2021, które poruszały temat opieki pacjentów z otyłością oraz metod leczenia stanu zapalnego.

Wyniki

U pacjentów otyłych dochodzi do rozwoju przewlekłego stanu zapalnego, co prowadzi do wielu komplikacji, takich jak konieczność wydłużenia pobytu na oddziałach szpitalnych czy zwiększenie ryzyka wystąpienia powikłań. U Pacjenta otyłego trudniej jest wykonywać procedury medyczne, takie jak zabiegi operacyjne czy anestezyjologiczne, komplikując organizację opieki nad takim pacjentem w przypadku nagłego pogorszenia stanu ogólnego. Otyłość pełni jednak funkcję ochronną przed rozwojem ostrego stanu zapalnego.

Wnioski

Otyłość prowadzi do rozwoju przewlekłego stanu zapalnego, co przyczynia się do wielu powikłań w organizacji opieki, takich jak konieczność przedłużenia pobytu na oddziałach szpitalnych czy zwiększenie ryzyka powikłań w postaci infekcji. Wiele badań wskazuje jednak na ochronną rolę otyłości w rozwoju ostrego zapalenia. Zasadne jest prowadzenie dalszych badań i działań mających na celu stworzenie bardziej specjalistycznych i skierowanych do omawianej grupy pacjentów rekomendacji.

Abstract (in English):

Introduction

Taking into account the numerous organizational challenges related to the care of seniors, there is a need to characterize the basic and current principles of caring for them, taking into account strictly defined disease states.

Materials and Methods

An analysis of scientific publications from 2004-2021 was carried out, concerning the care of obese patients and methods of treating inflammation.

Results

Obese patients develop chronic inflammation, which leads to many complications, such as the need to extend the stay in hospital wards or an increased risk of complications. In an obese patient, it is more difficult to perform medical procedures, such as surgery or anesthesia, complicating the organization of care for such a patient in the event of a sudden deterioration of the general condition. Obesity, however, has a protective function against the development of acute inflammation.

Conclusions

Obesity leads to the development of chronic inflammation, which contributes to many complications in the organization of care, such as the need to extend the stay in hospital wards or increasing the risk of complications in the form of infections. However, many studies indicate a protective role of obesity in the development of acute inflammation. It is justified to conduct further research and activities aimed at creating more specialized recommendations addressed to the discussed group of patients.

Keywords (in Polish): Opieka, Otyłość, Zapalenie, Osoby starsze.

Keywords (in English): long-term care, obesity, inflammation, elderly.

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Opieka nad pacjentami w trakcie stanu zapalnego

Corresponding author

Jakub Piotr Husejko

Department of Geriatrics, Collegium Medicum of the Nicolaus Copernicus University, Toruń, Polska;
email: kubahusejko@gmail.com

Authors (short)

J. Husejko et al.

Introduction

The current change in the available models of long-term care, dictated primarily by the aging of societies in highly developed countries and the development of knowledge on long-term care for patients in advanced age, is characterized by an increasing specialization in the individual approach to seniors, including comorbidities. Such new models of care can be found both in nursing homes and at home, and the key determinants of their development are, in addition to the aforementioned aging of the population, technological innovations or research into the cognitive functioning of the elderly, as well as economic or specialized limitations. medics [1].

In the organization of care for people in advanced age, the experience of medical personnel is also very important, as they know the current rules of conduct to a sufficient degree and are open to professional development and improvement of the quality of services provided. Additionally, the very fact of developing and acquiring one's own experience turns out to be positive for the patients covered by the care. A systematic review of studies evaluating nurses' experience in working with seniors indicated a significant role of experience in reducing depression, urinary incontinence, pressure ulcers, immobilization and aggressive behavior; improvement in achieving personal goals and greater family satisfaction with medical care [2]. Positive results in the form of reducing the risk of depression in long-term care recipients, and thus improving the quality of care provided, were also obtained in the case of active care, involving the elderly themselves, by nurses [3]. These factors should be taken into account when attempting to characterize the correct principles of long-term care.

A significant challenge related to long-term care is the multi-morbidity of elderly patients, which makes it difficult to plan a proper care strategy. A large study (115,203 participants) measuring the effect of multiple morbidity on long-term care needs found that more frequent care needs were associated with 3 or more comorbid conditions, particularly in the presence of dementia or Parkinson's disease. Moreover, it has been shown that with each additional disease, the risk of addiction to long-term care increases by 6.4% within 5 years [4].

Another factor that should be taken into account is the fact that inflammation develops as a result of many common diseases occurring in seniors, requiring additional care and increasing the risk of health complications, even with proper care. In a study measuring the incidence of fever in long-term care inmates, 123 cases of fever were reported among 80 women, of which 64% met infection criteria. Interestingly, these patients were ordered seven times more urine cultures than diagnosed with urinary

tract infections [5], which may be an observation towards the problem of overdiagnosis or too frequent empirical antibiotic therapy. On the other hand, in the analysis defining the frequency of infections in long-term care homes, defined in the discussed publication at 2.8-14% (depending on the analyzed center), attention was drawn to the high frequency of antibiotic-resistant bacteria, which may be related to the frequent use of antibiotics in long-term care [6]. In addition, multi-drug use has been shown to be too common in long-term care, including the use of inappropriate or unnecessary drugs, which can lead to drug interactions. This may lead to difficulties in the treatment of inflammation, for example by weakening the effect of drugs, causing complications that worsen health, and side effects in the form of weight gain in obese people [7].

Bearing in mind the above organizational challenges, there is a need to characterize the basic and current principles of caring for patients in advanced age, struggling with strictly defined disease states.

Aim

The aim of the publication is to summarize the current knowledge in the field of care for obese patients and the rules of conduct in the event of the development of inflammation in seniors, and then to try to define the principles of long-term care for obese patients during the inflammatory process.

Materials and methods

An analysis of scientific publications from 2004-2022 was carried out, concerning the care of obese patients and methods of treating inflammation in people using long-term care services. The publications were found using the following internet databases: PubMed, Cochrane, Google Scholar, using the keywords: long-term care, obesity, inflammation, elderly.

Results

How does inflammation affect seniors?

Inflammatory tanning can develop for many reasons: as a response to tissue injury, as a result of infection or the action of irritants. Regardless of the factors, however, the development of inflammation is associated with increased temperature, swelling, pain and heat due to increased blood flow through the tissues. The discussed processes may take place in an acute manner, which is related to an attempt to protect the organism against the above-mentioned harmful factors, or in a chronic manner, when they occur less intensively, but for a much longer period of time, and thus may lead to significant changes in the organism [8].

Already in the nineteenth century, the German doctor Rudolf Virchow suggested that it was the chronic inflammatory processes that influenced the development of chronic diseases, often occurring in people in advanced age. Numerous studies conducted in the following years confirmed these observations, showing the relationship between chronic inflammation and numerous diseases: cancer, cardiovascular system, nervous system, endocrine diseases, and also affect skin and bone tissues (Tab. 1).

Tab. 1. Chronic diseases regulated by inflammation [8]

Group of diseases	Examples
Cardiovascular diseases	<ul style="list-style-type: none"> • Atherosclerosis • Heart attack • Heart failure • Diseases of the cerebral vessels
Nervous system diseases	<ul style="list-style-type: none"> • Alzheimer's disease • Parkinson's disease • Epilepsy • Mild cognitive impairment
Metabolic diseases	<ul style="list-style-type: none"> • Diabetes • Metabolic syndrome
Skin diseases	<ul style="list-style-type: none"> • Cellulite • Wrinkles
Bone tissue diseases	<ul style="list-style-type: none"> • Osteoporosis • Muscular dystrophy

Inflammatory processes can be measured by concentrations of biomarkers such as CRP, IL-6, IL-18, and TNF- α . Importantly, in the context of people in advanced age, elevated levels of IL-6 have been demonstrated in people with locomotor system dysfunctions, and it has been determined that with the increase in this dysfunction, the concentration of the biomarker increases. Higher levels of IL-6 also correlated with slower walking [9].

How inflammation can affect the functioning of the elderly is evidenced by the processes taking place in SIRS (Systemic Inflammatory Response Syndrome), which can be defined as a multi-cause, systemic inflammatory process. According to diagnostic criteria, SIRS can be diagnosed by a minimum of two of the following criteria: heart rate greater than 90 beats per minute; body temperature below 36 ° C or above 38 ° C; spontaneous respiration rate greater than 20 per minute and blood leukocyte count less than 4,000 cells in mm³ or greater than 12,000 cells per mm³ [10]. In a study of 855 hospitalized sepsis patients, 6 biomarkers were measured and found that 71% of those ≥ 65 years of age had severe sepsis or septic shock, compared to 41% of younger subjects. Older age was associated with a higher mortality rate ranging from 2.9% in those aged 18-34 to 21% in those aged ≥ 80 years. Older age was also associated with higher values of biomarkers: CCL-23, IL-1ra, NGAL and TNFR-1a [10]. Further studies have shown higher levels of IL-6 in older people with sepsis than in younger patients [11].

When considering SIRS in people of advanced age, it should be taken into account that this condition occurs more often in seniors, which is associated with a frequently occurring, initially weakened inflammatory response, which then suddenly becomes very severe with progression to septic shock [12]. Also, the initial symptoms of SIRS themselves may be reduced or absent in older adults. According to studies to date, fever is absent or reduced in up to a third of elderly patients with acute infection [13]. Frequent comorbidities are significant complications affecting the course of SIRS in seniors. Analyzing 233 patients over 65 years of age diagnosed with sepsis, it was shown that the factors significantly shortening the survival time of patients with infection were: chronic kidney disease, chronic obstructive pulmonary disease, hypoxia and tachycardia on admission, initial albumin level < 2.44 g / dl, decrease in CRP below 11% in 48 h and $< 20\%$ in 96 h. The baseline CRP level did not correlate with worse survival rates [14]. This observation was confirmed in later studies, where an attempt was made to show differences in the association of vital parameters with mortality between elderly (< 75 years) and older (> 75 years) patients

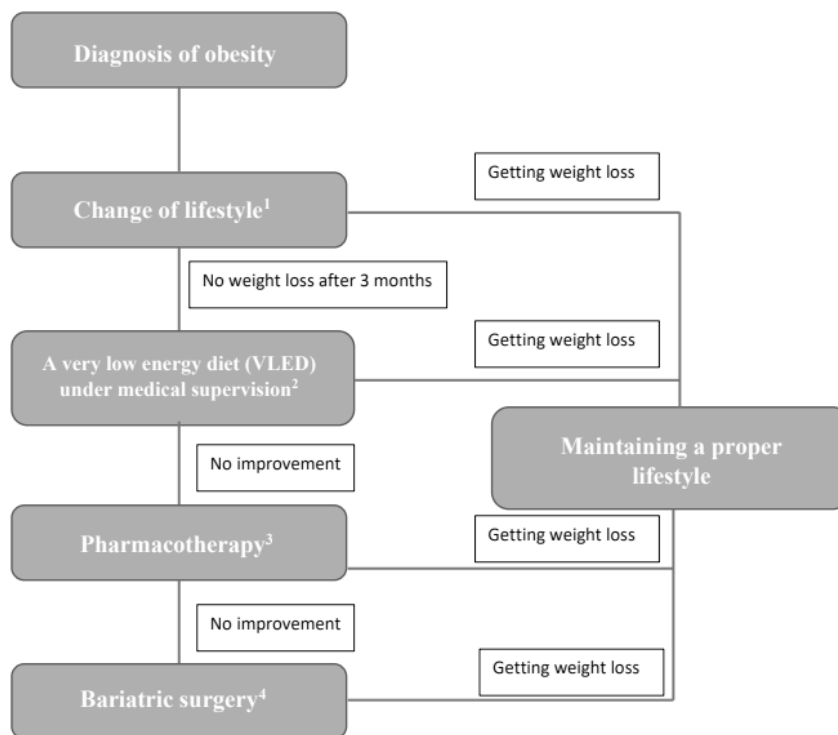
with sepsis. Only body temperature had a significantly different effect on mortality between patients in both groups. Hypothermia was associated with increased mortality, and fever with reduced mortality in younger patients with sepsis, but did not affect mortality in advanced age patients [15].

Long-term care in obese patients

Obesity is a medical condition that significantly affects the quality of life of many people in advanced age, and thus the organization of care for them. It is defined as abnormal or excessive fat accumulation that poses a health risk. Patient care often turns out to be a challenge due to the variety of reasons for its occurrence, such as insufficient physical activity, improper diet, but also food intolerance or chronic stress, the treatment of which should be based on pharmacotherapy consisting of metabolically neutral drugs or those that promote the loss of weights, which should be considered in long-term care. It should be noted that changes in the lifestyle of an obese patient, its effects should be monitored for at least 6 months from the start of therapy [16].

The sequence of treatment strategies should be as follows: lifestyle change, low-energy diet (VLED), pharmacotherapy and, ultimately, surgery (Fig. 1). It is worth noting, however, that the implementation of pharmacological treatment in obese patients is a challenge because it requires a careful assessment of the physicochemical properties of the drug and taking into account pathological changes in this specific group of patients, such as: increased intestinal permeability, increased gastric emptying, increased cardiac output and increased share of fats in total body weight. The studies prove statistically significant changes in the pharmacodynamics and the volume of distribution of a given drug in obese people. This may significantly affect the effectiveness of the pharmacological therapy used [17].

Fig. 1 Scheme of obesity treatment in elderly patients [18]



1. A proper lifestyle should include: physical activity (1h / day), low-fat and low-calorie diet, eating breakfast, self-weight control, maintaining a constant nutritional pattern.
2. VLED is a diet with a calorific value of 450-800 a day and should be carried out under the constant supervision of a physician.
3. Phentermine, Orlistat, Liraglutide.
4. More research is required to check the safety and long-term efficacy of pharmacotherapy and bariatric surgery

There are many complications in obese patients that may impede long-term care. It has been shown that obese patients, at the beginning of their stay in health care facilities, experienced more complications such as infections and heart failure. Their average time in hospital was also longer. However, no differences in mortality, multiple organ failure or pulmonary complications were found [19]. Some studies even show that obesity is a protective factor in mortality. It has been shown that obese patients have a much greater chance of improving their health and surviving after hospitalization in an intensive care unit than patients with a normal body weight. The cause of this phenomenon is not fully explained, but there are two theories: the first one assumes that adipose tissue of obese patients contains significant amounts of large adipocytes, which promotes the accumulation of M1 macrophages, which are associated with the production of large amounts of pro-inflammatory cytokines and the emergence of resistance to insulin. Patients with severe inflammation develop small adipocytes, which promote the accumulation of M2 macrophages, which produce a number of anti-inflammatory factors, accelerating wound healing and increasing insulin sensitivity. The first of the discussed theories assumes that the possibility of transforming macrophages from type 1 into type 2, with the simultaneous large population present in the adipose tissue of obese patients, favors more effective control of inflammation in their body. The second theory focuses on the increased nutritional reserve of obese patients, which may contribute to the maintenance of better nutrition and normal organ function during a critical state [20].

However, in critically obese patients, excess body weight has an adverse effect on the risk of complications from the respiratory and cardiovascular systems. Obesity is associated with a greater likelihood of AKI and infection, with difficulties in the selection of pharmacotherapy and diet, diagnosis and transport of the patient. The very hospitalization of patients with excess body weight is associated with the need to train staff in the specific conditions of evacuation and transport of such a patient, preparation and use of more disinfectants, having specialist equipment in the ward adapted to greater loads, and planning an alternative to imaging tests using equipment with standard dimensions [21].

Also, medical procedures in obese patients may be more difficult to perform. The publication summarizing two studies focusing on the development of standards for blood pressure measurement in obese patients showed that blood pressure monitoring should be carried out using cuff technology applied to the patient's finger [22]. On the other hand, according to a survey conducted among cancer surgeons, $\frac{1}{3}$ of the respondents associated obesity with the extended duration of the procedure. In addition, many surveyed specialists considered obesity to be an important risk factor for the occurrence of intraoperative and postoperative complications, especially if the procedure involved the tissues of the chest, abdomen, breasts and soft tissue [23]. An important complication in the treatment of obese people is also general anesthesia. In a study aimed at developing standards facilitating the safe use of general anesthesia in obese patients, five key factors were presented that should be followed when conducting general anesthesia in obese adult patients: careful preparation and planning of anesthesia, optimization of the patient's position, optimization of ventilation through appropriate pre-oxygenation and increased positive end expiratory pressure (PEEP), efficient airway protection and team work [24]. Noteworthy is

the difficulty of mask intubation and ventilation in obese subjects. In the conducted studies, obesity was not a problem for intubation, but for mask ventilation [25].

When organizing care for obese patients, one should remember about the proper relationship between caregivers and seniors. In the conducted research, medical students in contact with an obese patient based their behavior on negative stereotypes, avoided eye contact with the patient and searched for the causes of all his diseases in excessive body weight. It is a big problem of modern medicine, which may result in worse relations between health care workers and patients struggling with obesity, and as a result, lower quality of medical services that the health care system can provide to patients [26].

Principles of protection against the development of inflammation in obese people

Maintaining a healthy lifestyle protects not only against the development of obesity, but also against pro-inflammatory and profibrogenic processes by inhibiting the recruitment of inflammatory macrophages [27], and vigorous aerobic exercise of the whole body leads to a sharp increase in the level of anti-inflammatory adiponectin in plasma in people with abdominal obesity [28]. On the other hand, it has been shown that low physical activity and increased thickness of skin folds lead to an increase in the level of pro-inflammatory proteins CRP, C3 and C4 [29].

Obesity itself and related chronic diseases lead to a greater likelihood of entering a long-term care institution at an earlier age, and also increase the overall cost of care [30].

In the care of obese seniors with developing inflammation, measures should be taken to protect against cognitive impairment, as it has been shown that such patients had an increased probability of cognitive impairment compared to those without obesity [31]. The inclusion of patients in diabetes care is also justified as previous pilot projects had a positive impact on patient outcomes (HbA1c) over 12 months. Importantly, patients' HbA1c increased again after 24 months, suggesting that in order to maintain a positive impact, facilities would need to regularly reassess their outcomes, reassess how they have structured diabetes care, and update their action plan [32].

Surgical treatment of obesity proves to be protective against the development of psoriasis and psoriatic arthritis [33], and bariatric surgery is associated with a 32% lower risk of psoriatic arthritis [34] and reduces the incidence of gout and psoriatic arthritis. hyperuricemia [35]. Therefore, although the indications for bariatric treatment are still under discussion, it is worth considering them in the context of protection against developing inflammation.

Differences in the management of sudden inflammation in obese patients

In the case of rapid development of inflammation, it is important to remember about the existence of the so-called obesity paradox. It is hypothesized that obesity-related chronic inflammation causes a milder course of acute inflammation such as sepsis [36]. Studies on this phenomenon have shown that adipose tissue regulates the inflammatory response by secreting anti-inflammatory mediators such as leptin, interleukin-10 (IL-10) and soluble tumor necrosis factor receptor 2. High-density lipoproteins in obese patients may bind to bacterial endotoxins, which in turn is beneficial during the development of inflammation [37]. This process is confirmed in clinical observations, where it was found that short-term survival after acute inflammation (pneumonia, infarction) is better in obese patients [38].

It is also important to consider the differences in the treatment of inflammation in obese patients compared to non-obese patients. In a study evaluating the effectiveness of fluid therapy in SIRS patients, it was shown that obese patients receive lower fluid doses depending on their body weight compared to

non-obese patients, and yet show a better survival [39]. On the other hand, measurements of epinephrine treatment have shown that the therapeutic dose per kilogram of body weight is lower than in non-obese subjects, so the total amount of medication required for administration may be the same in patients with high body weight as well as in people with a weight within the normal range [40].

As previously shown, obesity makes it difficult to carry out many medical procedures. This observation is confirmed in the case of exacerbation of inflammation in COPD, when overweight seniors increase the risk of using non-invasive and invasive ventilation and prolong hospitalization, but mortality does not increase [41].

Discussion

Our publication shows that obesity leads to the development of chronic inflammation, which in turn has metabolic consequences, such as non-alcoholic fatty liver disease, type 2 diabetes and dyslipidemia. In the publication of Hurt et al. It was confirmed that obesity increases the risk of incidence of various diseases and increases mortality. Additionally, attention was drawn to the fact that patients with obesity and coexisting diseases are a serious problem in intensive care units, due to the difficult performance of medical procedures, such as intubation, especially in patients with third degree obesity. Obese patients also have reduced functional residual capacity and a heavy chest that impedes mechanical ventilation. These people also suffer from anatomical points that may have a different location, which is a challenge when, for example, inserting central and arterial catheters for monitoring. Reactivating patients is also a problem, which often makes their hospitalization longer [42]. This article presents the difficulties associated with hospitalization and performing surgery in elderly obese patients. In Hodgson et al. the authors present one of the possible causes of this phenomenon, which may be the fact that obesity is associated with an increased circumference of the abdomen and visceral fat, which makes it difficult to ventilate the lungs, because the respiratory resistance increases and the compliance of the respiratory system decreases, which translates into an increased effort to ventilate the lungs. Respiratory disorders such as obstructive sleep apnea are associated with a higher risk of postoperative acute respiratory failure, cardiac events and ICU admissions [49]. Also Romano et al. note that aging is associated with changes in the structure of the lungs, a decrease in the function and strength of the respiratory muscles, which may additionally be a challenge for doctors [50]. Aldenkortt et al. an inverse correlation has also been demonstrated between the partial pressure of oxygen in the blood and the value of BMI in anesthetized patients, and an increased risk of postoperative tracheal intubation in obese patients [51].

Obesity and inflammatory processes caused by various pathological processes are considered an integral part of the aging process. With age, the concentration of, for example, tumor necrosis factor (TNF-alpha) will increase, the level of which correlates with pathological changes such as, for example, diabetes, Alzheimer's disease, and decreased immunity. Especially in the elderly, the consequences of obesity, particularly sarcopenic obesity, such as diabetes, vascular diseases or inflammatory changes, must be taken into account. Kennedy R Lee also draws attention to the fact that the treatment of obesity in the elderly should focus on reducing abdominal fat while maintaining muscle strength [45].

This publication presents the fact that the course of SIRS and septic shock in elderly patients may differ from those in younger patients. Elderly patients often present non-specific symptoms, such as lowering body temperature or results of markers for SIRS detection other than in young patients, which may be influenced by the multi-morbidity often associated with seniors. This is also confirmed by the work of Hsien-Ling et al., In which the authors present unclear symptoms of developing sepsis in older patients. However, they concluded that the described patients with fever or tachycardia are at a higher

risk of bacteraemia [46]. This may significantly hinder diagnostics and the prompt introduction of the necessary treatment. In the article by Talebi-Taher et al, based on the conducted prospective analysis, markers of CRP and ESR were presented as the most specific and helpful in differentiating SIRS from sepsis in elderly patients [47].

The advanced age of this group of patients also negatively affects the risk of sepsis itself and the related mortality. Similar conclusions were presented in their work by Prashant et al., stating that advanced and very advanced age as an independent risk factor increases mortality in the course of sepsis, and introduced the need to surround such patients with early and intensive care in order to promptly diagnose and introduce effective treatment [48].

This article focuses on the correct relationship between obese patients, who develop inflammation, and their caregivers. This issue is important in the context of the organization of proper care for the discussed group of patients, especially since previous studies showed that obese people often experienced a disrespectful approach, inadequate treatment related to overweight and offensive comments from medical staff, which led to their avoidance [43]. However, this observation is not fully confirmed by other studies because, for example, in measurements by Robstad et al., it was found that nurses try to care for obese patients as well as other patients, however, additional difficulties associated with caring for such people may lead to the emergence of negative, stigmatizing behavior among the staff [44].

The article presents the fact that bariatric surgery in obese patients is associated with many benefits, including a reduced risk of developing psoriasis or gout, therefore it was emphasized that it is worth considering this method of treatment also in older patients. In the article by Giordano et al. based on the review of available studies, it was concluded that older patients should not be deprived of the possibility of surgical treatment of obesity based only on their age, but each time they should be informed about a slightly increased risk of surgery and the likelihood of more difficult achievement of satisfactory results [52]. In many other articles, including Dorman et al. the authors presented the results that the older age of patients undergoing bariatric surgery may be associated with a longer stay in hospital compared to the group of younger patients, but it is not associated with a significantly increased risk of serious complications and death in the postoperative period [53]. However, the case of each patient, especially those suffering from chronic inflammation, should be considered on an individual basis, assessing the possible benefits to the patient and the risks associated with surgery.

The reduction in the mortality of obese patients during the development of inflammation, mentioned by us, may be due to the increased release of anti-inflammatory adipokines in them. However, this explanation has some limitations, as one of the adipokines, leptin, has a strong proinflammatory effect that activates macrophages and induces hepatic tumor necrosis factor (TNF) - α , interleukins (IL) -6, IL-12 and monocyte chemoattractant protein-1 (MCP-1) [42]. Therefore, further research in this area is necessary to clarify the inaccuracy.

Limitations

Our analysis has some limitations. First of all, the number of studies on the care of elderly patients in the course of inflammation is limited, possibly due to the complexity of the issue. Many of the cited measurements therefore raise the discussed topic only partially, and it can be assumed that if specialized studies are carried out in the future on seniors with ongoing inflammation of various etiology and duration, the obtained results will be different than those presented in our analysis..

Conclusions

Obesity leads to the development of chronic inflammation and thus increases the risk of many chronic diseases. This fact can be measured by biomarkers, the elevated concentration of which has also been observed in people with motor dysfunction, which may be of great importance in understanding the disease states that increase the need for elderly care.

In obese patients, there are many complications that may hinder long-term care, such as the need to extend the stay in hospital wards or increasing the risk of complications in the form of infections or exacerbations of chronic diseases. Medical procedures themselves, such as surgeries or anesthetic procedures, may also be more difficult to perform due to the mechanical barrier of highly developed adipose tissue. Therefore, there is a need for staff training in the specialized organization of care for obese seniors.

Importantly, many studies indicate a protective role of obesity in the development of acute inflammation, which may be due to the fact that obese patients experience chronic inflammation, and therefore exacerbation of it is safer than in lean people.

One should not forget about establishing a proper patient-caregiver relationship, because obesity turns out to be a significant discriminating factor, even in a subconscious way, which may result from greater difficulties in caring for such a patient. This issue should be raised in subsequent publications on the care of elderly patients with obesity.

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