Derleme Makalesi / Review

Geriatrik Onkoloji Hastalarında Tedaviye Uyum

Adherence to Treatment in Geriatric Oncology Patients

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ÖZET

Bu çalışma, küresel yaşlanma artışının ortasında yaşlı nüfusta kanser tedavisine bağlılığı değerlendirmeye odaklanmaktadır. Yaşlanma ve kanser arasındaki ilişki tam olarak anlaşılmamış olsa da, birbirlerini etkilediklerine inanılmaktadır. Yaşlılarda sık görülen kanserler arasında meme, akciğer, prostat ve kolorektal kanser yer almaktadır. Bu çalışma, yaşa bağlı kanserler için tedaviye uyumu değerlendirmeyi ve etkileyen faktörleri belirlemeyi amaçlamaktadır. Tedavinin etkinliği için çok önemli olan tedaviye bağlılık, yaşlılarda genç bireylere kıyasla daha düşük bulunmuştur. Bağlılığı etkileyen faktörler arasında yaş, cinsiyet, sosyoekonomik durum, komorbiditeler, tedavi süresi ve polifarmasi yer almaktadır. Sosyal destek eksikliği ve polifarmasi uyumsuzluğa katkıda bulunmaktadır. Yaşa bağlı hastalıkların artmasıyla birlikte polifarmasi daha yaygın hale gelmekte ve sosyal desteğe duyulan ihtiyacı vurgulamaktadır. Yaşla birlikte kanseri etkili bir şekilde yönetmek için bağlılığı artırmak hayati önem taşımaktadır. Ancak çalışmalar, birçok yaşlı bireyin polifarmasi ve destek eksikliği nedeniyle tedaviye uymakta zorlandığını ve bunun da sağkalımlarını etkilediğini ortaya koymaktadır. Çok az sayıda çalışma, yaşlı kanser hastalarında tedaviye uyuma odaklanmakta ve hasta sonuçlarını iyileştirmek için bu alanda daha fazla araştırma yapılması gerektiğini vurgulamaktadır.

Anahtar kelimeler: Geriatrik, Tedavi uyumu, Kanser, Onkoloji

ABSTRACT

This study focuses on assessing cancer treatment adherence in the elderly population amidst the global increase in aging. While the relationship between aging and cancer is not fully understood, they are believed to influence each other. Common cancers in the elderly include breast, lung, prostate, and colorectal cancer. The study aims to evaluate adherence to treatment for age-related cancers and identify influencing factors. Treatment adherence, crucial for treatment effectiveness, is found to be lower in the elderly compared to younger individuals. Factors affecting adherence include age, gender, socioeconomic status, comorbidities, treatment duration, and polypharmacy. Lack of social support and polypharmacy contribute to non-adherence. With the rise in age-related diseases, polypharmacy becomes more common, emphasizing the need for social support. Enhancing adherence is vital for managing cancer effectively with age. However, studies reveal that many elderly individuals struggle to adhere to treatment due to polypharmacy and lack of support, impacting their survival. Few studies focus on treatment adherence in elderly cancer patients, highlighting the need for more research in this area to improve patient outcomes.

Keywords: Geriatric, Treatment adherence, Cancer, Oncology

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INTRODUCTION

In the twentieth century, positive developments in technology and medicine worldwide have contributed to an increase in life expectancy and the growing elderly population in many countries, both in absolute numbers and as a proportion of the total population (Erkoç, & Yardım, 2011; Kurtkapan, 2018; İlçe, & Kuzay, 2023). According to the World Health Organization's (WHO) data for the year 2020, the population aged 60 and over was 1 billion in 2019, with expectations of reaching 1.4 billion by 2030 and 2.1 billion by 2050 (WHO,2023). This trend is accompanied by an increase in the prevalence and incidence of many non-communicable chronic diseases, predominantly affecting elderly individuals (Erkoç, & Yardım, 2011; Kurtkapan, 2018.

Advancing age is a significant risk factor for many types of cancer, with cancer being the second most common cause of death in elderly adults after cardiovascular disease. Worldwide data reveal that while the average incidence of cancer diagnosis is approximately 25 per 100,000 individuals aged 20 and under, this number increases to over 350 per 100,000 individuals in the 45-49 age group, and over 1,000 per 100,000 individuals aged 60 and above, with incidence continuously increasing with advancing age (NCN, 2023). According to current data from the Surveillance, Epidemiology, and End Results (SEER) Program of the National Cancer Institute (NCI), the median age at cancer diagnosis is 66, with average ages at diagnosis for common cancer types being 62 for breast cancer, 67 for colorectal cancer, 71 for lung cancer, and 66 for prostate cancer (SEER, 2023; Estapé, 2018). Accordingly, ensuring adherence to treatment in the management of cancer, which is prevalent among elderly individuals, is crucial for maintaining treatment efficacy and quality of life. This review article aims to determine the adherence of geriatric individuals undergoing oncological treatment and identify the barriers to adherence, as well as the factors facilitating adherence.

GERIATRICS AND CANCER

Although the relationship between aging and cancer has not yet been conclusively resolved, it is believed that they mutually influence each other (Ayvat, & Atlı Özbaş, 2021). Numerous studies investigating the fundamental biological interactions between these two concepts focus on DNA metabolism and DNA repair processes. Recent research on microsatellite (repetitive DNA sequences) instability in hematopoietic stem cells derived from the bone marrow of elderly patients, compared to samples from young adults' bone marrow and umbilical cord blood, has revealed higher levels of deviations in the DNA sequences of young adults (NCN, 2023; Estapé, 2018; Berger, et al., 2006; Kenyon, et al., 2005). These findings indicate progressive declines in DNA mismatch repair processes in hematopoietic stem cells of elderly individuals. Such defects in DNA sequences can lead to a progressive increase in acute leukemia and myelodysplastic syndrome in elderly individuals (Estapé, 2018; Berger, et al., 2006). Among the common cancers in geriatric individuals are breast, lung, prostate, and colon cancers (WebMD, 2023).

The incidence and mortality of breast cancer, the most common cancer in geriatric women, increase with age. Breast cancer is the second most common cause of cancer-related deaths among women in the United States, representing approximately 30% of cancer cases among women overall. The American Cancer Society (ACS) recommends regular mammography screening for women aged 45-54 annually and every two years for those aged 55 and older, provided their life expectancy exceeds ten years (ACSa, 2023). Due to advancements in screening and treatment, nearly 90% of individuals diagnosed with breast cancer are predicted to survive for five years after diagnosis. An international survival comparison study involving 46,881 geriatric female patients diagnosed with breast cancer between the Netherlands (41,055) and Ireland (5,826) found five-year survival rates to be 88.8% in the Netherlands and 82.9% in Ireland. Additionally, when stratified by stage, no survival difference was observed in stage I disease, but poorer survival was reported in

Irish patients with stage II and III disease (Kiderlen, et al., 2015).

The median age at diagnosis of lung cancer is 70, and the median age at death from lung cancer is 72 (WebMD, 2023). In Turkey, the median age at diagnosis is observed to be 64, with this cancer being less commonly encountered in individuals under 40 years old (General Directorate of Services for Disabled and Elderly, 2022). Despite numerous advancements in lung cancer treatment methods, the expected lifespan often remains below five years. According to data from the Global Cancer Observatory (GCO), over 235,000 people were diagnosed with lung cancer in 2020, with over 131,000 deaths attributed to the disease. The five-year survival rate for patients diagnosed with lung cancer is only 21% (International Agency for Research on Cancer, 2023). The ACS recommends regular screening for adults aged 55-74 who are in good health, have a smoking history of more than 30 pack-years, currently smoke, or have quit smoking within the past 15 years. For adults aged 75 and older, screening decisions are recommended to be made on an individual basis for those with a life expectancy exceeding ten years and at risk for lung cancer (ACSb, 2023).

Prostate cancer is known as the most commonly diagnosed cancer in men. The average age at diagnosis is 68, and it is the second leading cause of cancer-related deaths (Droz, et al., 2010). Prostate cancer generally progresses slowly, allowing many cases to survive for extended periods without diagnosis. Autopsy studies have shown that many elderly men who died from other causes had prostate cancer that did not affect them during their lifetimes (Siegel, et al., 2016). Approximately 250,000 men were diagnosed with prostate cancer in 2020, resulting in over 34,000 deaths. More than 98% of individuals with prostate cancer have a life expectancy exceeding five years (ACSc, 2023).

Colorectal cancer (CRC), with an average age at diagnosis of 67, is the third most common cancer in adults aged 70 and older and the second leading cause of cancer-related deaths (Siegel, et al., 2016). Most cases of CRC in elderly adults occur in the proximal colon or rectum. Colorectal cancer affects men and women of all races and ethnic groups. Due to advancements in screening and treatment methods, it is known that over 63% of patients diagnosed with colorectal cancer have a life expectancy exceeding five years (International Agency for Research on Cancer, 2023). In a study conducted by Lin et al. (2016) on fecal occult blood tests, they found reductions in colorectal cancer-specific mortality rates in four randomized controlled trials involving a total of 50,144 adults aged 70-80 during an 11 to 30-year follow-up period. The ACS recommends routine screening for adults aged 45-75 with a life expectancy exceeding ten years, while screening decisions for those aged 76 and older should be based on individual preferences, life expectancy, overall health status, and previous screening history (ACSd, 2023).

It is known that the regular use of screening programs reduces cancer-related mortality rates by approximately 30% (Mukama, et al., 2020). In a study by Ilhan et al. (2019), it was found that 23% of individuals (n: 131) visiting a geriatric clinic underwent cancer screening. In the same study, it was determined that the rates of screening for colon, breast, and prostate cancer were 5.3%, 4%, and 33.3%, respectively, but none of the patients underwent lung cancer screening. Although there is no clear rule on when to discontinue the use of screening programs, the ACS generally recommends individual decisions for geriatric individuals aged 75 and older based on overall health status and life expectancy exceeding ten years (ACSd, 2023).

Table 1. Overview of Common Cancers in the Elderly: Screening and Survival Statistics

Cancer Type	Median Diagnosis Age	Age-Related Increase in Incidence and Mortality	Screening Recommendations (ACS)	5-Year Survival Rate
Breast Cancer	US: 45-54	Incidence and mortality increase with age	Annual screening for ages 45-54; biennial for 55+	90% (due to advancements in screening and treatment)
Lung Cancer	US: 70, Turkey:64	High-risk group among ages 55-74	Regular screening for ages 55-74; individual decision for 75+	21%
Prostate Cancer	68	Most common male cancer; second leading cause of cancer death in men	Ages 50-75, based on overall health and life expectancy	Over 98%
Colorectal Cancer	67	Common in adults aged 70+	Routine screening for ages 45-75; individual decision for those over 76 based on personal factors	63%
General Screening Programs	-	-	Screening programs reduce cancer mortality by approx. 30%	-

ADHERENCE TO TREATMENT IN GERIATRIC ONCOLOGY PATIENTS

Treatment adherence refers to the extent to which an individual complies with medical treatment or health recommendations (Özbek Yazıcı, et al. 2006). The patient's adherence to the prescribed treatment plays a significant role in the effectiveness of the treatment administered. Non-adherence to treatment is more commonly observed in geriatric individuals compared to younger ones (Özdemir, et al., 2016).

Psychological and physical changes associated with the aging process, as well as comorbid conditions, can affect an elderly adult's ability to tolerate cancer treatment and may increase the risk of complications associated with treatment (Alan, et al., 2013; NCCN Guidelines, 2023). The biological characteristics of cancers and their responses to treatment differ in geriatric individuals compared to younger ones. Therefore, comprehensive assessment of geriatric patients is crucial to identify treatable geriatric issues not routinely addressed in oncology care, assess the risk of toxicity or decreased quality of life associated with cancer treatment, and allow for targeted interventions aimed at improving quality of life and treatment adherence (NCCN Guidelines, 2023; Güven, 2021; Paillaud, et al., 2022). A comprehensive assessment can identify factors such as mental status,

nutritional issues, presence of comorbidities, and medication use that may negatively impact cancer treatment (Alan, et al., 2013). The International Society of Geriatric Oncology published guidelines in 2010 recommending the assessment of underlying health status before treatment decisions are made and classifying treatment decisions as healthy, vulnerable, frail, or terminal (Droz, et al., 2010). A study evaluating adherence to these guidelines in the treatment of individuals aged 70 and older diagnosed with prostate cancer found that nearly half of the patients received treatment that did not adhere to the guidelines, with non-adherence to guidelines being associated with non-metastatic disease and negatively impacting survival rates (González Serrano, et al., 2021).

Adherence to treatment is influenced by factors such as the patient's age, gender, socioeconomic status, marital status, level of education, presence of comorbidities, duration of treatment, and polypharmacy use. In a study by Ho et al. (2020) involving breast cancer patients, higher non-adherence to chemotherapy treatment was observed, with non-adherence being associated with ethnic origin and advanced age, and non-receipt of recommended chemotherapy treatment was associated with higher mortality rates. In a study aimed at determining adherence to treatment plans in geriatric patients, it was found that non-adherent patients had a lower

biological age (Graessle, et al., 2022). Adherence to treatment is closely related to the duration of treatment. In a study involving cancer patients, it was found that adherence to treatment was high in the first year (77% of 1317 patients), but decreased to 22% after five years, with high adherence rates in the first two years but decreasing thereafter. Factors associated with non-adherence included being unmarried, having multiple comorbidities, being in an advanced cancer stage, and having a low economic status (Sood, et al., 2022). In a study by Özbek et al. (2006) to determine adherence to treatment in geriatric patients, the frequency of using one or more medications was 83.9%, and the frequency of adherence to recommended treatment was 83%. It was noted that the high number of medications used, neglect, and forgetfulness were among the most important reasons disrupting treatment adherence. In a study involving geriatric colorectal cancer patients (n: 3,239), the prevalence of polypharmacy was 54.7%, and patients using polypharmacy had poor 5-year survival rates (Chen, et al., 2021). Similar results have been found in many other studies (Özbek Yazıcı, et al. 2006; Özdemir, et al., 2016; Ho, et al., 2020; Hamine, et al., 2015; Yang, et al., 2020). In a study by Antonio et al. (2018) involving cancer patients aged 75 and older (n: 193), it was reported that 15% of chemotherapy candidates refused treatment due to polypharmacy, and 45% of patients receiving chemotherapy did not complete their treatment due to toxicity and social support problems (Antonio, et al., 2018).

Cancer is the leading cause of mortality and morbidity worldwide (Aytulu, et al., 2022). Cancer requires adherence to treatment for long-term treatment, care, and effective health management. However, treatment adherence, which is crucial for managing the cancer treatment process effectively, is only 50% in these patients (Hamine, et al., 2015). In a study examining the adherence to multidisciplinary team recommendations and disease outcomes in patients diagnosed with early-stage breast cancer, it was found that 18.2% of the 4501 patients were non-adherent, and the non-adherent group had lower survival rates (Yang, et al., 2020). Another study showed that

guideline-based treatment improved overall survival in breast cancer patients, with non-surgical treatment patients aged 70 having nearly twice the risk of death within 10 years after diagnosis compared to those who underwent treatment (Ho, et al., 2020). In a study by Lindqvist et al. (2022) (n: 238) evaluating the impact of adherence to first-line treatment guidelines on overall survival and reasons for non-adherence in geriatric patients with non-small cell lung cancer (NSCLC), only 33.3% of patients were treated according to guidelines, adherence decreased significantly with age, and factors associated with non-adherence included poor performance status, frailty, and limited lung function.

Insufficient adherence to treatment leads to an increase in morbidity and mortality rates and results in an average increase in costs of $100 billion annually (Hamine, et al., 2015; Loğoğlu, et al., 2013; Iuga, et al., 2014; Çor, & Soysal, 2023). Many studies have reported that individuals who do not adhere to their current treatments have a higher risk of hospitalization compared to the general population (Hamine, et al., 2015; Loğoğlu, et al., 2013; Iuga, et al., 2014; Çapar, et al., 2018). Studies have consistently shown that individuals aged 70 and older exhibit higher rates of non-adherence to treatment compared to younger individuals (Yang, et al., 2020). A study involving geriatric oncology patients (n: 1125) reported that 14% of patients with advanced-stage cancer were non-adherent to treatment, and 70.4% of deaths in this group were attributed to non-adherence to treatment. The same study found that tobacco exposure and alcohol use were higher in non-adherent patients (Graessle, et al., 2022). Non-adherence to drug therapy, which is the foremost treatment in ensuring effective treatment, is highly prevalent among geriatric individuals due to changes in their physical and cognitive processes and the presence of comorbid conditions (Aydos, et al. 2021). In the United States, non-adherence to medication alone leads to 125,000 deaths annually and accounts for approximately 10% to 25% of hospital admissions (Fatima, et al., 2018).

CONCLUSION

In conclusion, with the aging of the world population, the frequency of age-related chronic diseases and comorbidities in geriatric individuals is increasing. The increase in comorbidity prevalence necessitates polypharmacy use and the need for social support. Adherence to medical treatment, which is crucial for effectively treating cancers with increasing incidence and prevalence with advancing age, is important for increasing survival time and quality of life and ensuring effective cost management. However, studies in this field have shown that the majority of geriatric individuals are inadequate in adhering to treatment due to polypharmacy use and lack of social support, unfortunately reducing their survival times. Due to the higher prevalence of geriatric syndromes in elderly cancer patients compared to non-cancer patients, comprehensive evaluation is important to improve treatment adherence. A comprehensive assessment can identify factors such as comorbidity status, polypharmacy use, past medical history and experiences, risk of toxicity associated with cancer treatment, and social support history that may affect treatment adherence. Especially due to the parallel relationship between long treatment duration and treatment non-adherence, careful follow-up of patients receiving cancer treatment for more than two years and frequent assessment of treatment adherence will positively affect treatment effectiveness. Additionally, it was noted in the literature review that there are very few studies evaluating treatment adherence in geriatric cancer patients. Therefore, it is believed that studies conducted in this area will positively contribute to the treatment of these patient groups.

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