Bölüm
45

KANSER REHABİLİTASYONU TEMELLERİ

Serpil Çelik[1]

GİRİŞ

Erken tanı ve tedavideki yeniliklerle kanser tanısı almış hasta sayısı giderek artmaktadır. ABD 'de 2040 yılında kanser tanısı almış kişi sayısının 26 milyona ulaşması beklenmektedir [1]. Kanser rehabilitasyonu; kanser tanısı almış bir hastaya, hastalığın ve tedavilerin belirlediği sınırlar içerisinde ,en yüksek düzeyde fiziksel, sosyal, psikolojik ve mesleki fonksiyonların kazandırılmasına yardımcı olmak şeklinde tanımlanır [2]. Esas amaç kişinin yaşam kalitesinin arttırılmasıdır.

Bu bölümde sırasıyla kanser rehabilitasyonu temel ilkeleri ,evreleri, değerlendirilmesi, egzersizin kanser rehabilitasyonundaki önemi, sık karşılaşılan rehabilitasyon gerektiren sorunlar, bu sorunlara tedavi yaklaşımları anlatılacaktır.

Kanser tedavileri yoğun güçsüzlük, fiziksel fonksiyon ve yaşam kalitesinde azalmaya yol açmaktadır. Kemoterapi, cerrahi, radyoterapi, hormonal tedavi, hedefe yönelik tedavi aşamalarının hepsinde bu durum gözlenmektedir [3].

Kanser rehabilitasyonu ve prehabilitasyon konusunda son dekatta belirgin gelişmeler yaşanmış, kanser rehabilitasyonu tanımı da zamanla geliştirilmiştir. 1978 yılında Cromes; hastalığın ve tedavisinin izin verdiği ölçüde hastayı fiziksel,sosyal,psikolojik ve mesleki olarak en uygun düzeye getirmek olarak tanımlamıştır [4].

Kanser rehabilitasyonu; fizik tedavi ve rehabilitasyon uzmanlığının önemli bir parçasıdır. Kanser rehabilitasyonu ekibi; medikal onkolog, fizik tedavi ve rehabilitasyon hekimi,radyasyon onkoloğu, cerrah, algolog, fizyoterapist, hemşire, iş-uğraşı terapisti, psikolog-psikiyatrist, konuşma–yutma terapisti, ortez-protez uzmanı, sosyal hizmet uzmanı, diyetisyen, hasta ve ailesinden oluşmaktadır [5].

Kanser hastalarında egzersizin olumlu etkilerine ait bilgiler artmasına rağmen egzersiz programına yönlendirmeler yeterli değildir [6]. Medikal onkolog ve fizik tedavi ve rehabilitasyon uzmanlarının ileri evre kanser hastalarında rehabilitasyon gereksinimi algıları da değişkenlik göstermektedir [7,8].

Kanser tanısı almış hastalarda; kanserin ileri evrede ve/veya, metastazların olması, komorbid durumların artışı, şiddetli ağrı olması, esas kanser tedavisinin öncelik olması, kötü prognoz düşüncesi ve yaşam beklentisinin azalması, fonksiyonel bozuklukların ve kayıpların yeterince tanımlanmaması, rehabilitasyon hizmetlerinde haberdar olunmaması ve hastaların rehabilitasyon kliniklerine yönlendirilmemesi, hasta ve ailesinin bilgilendirilmemesi, rehabilitasyon hizmetlerinin yetersiz oluşu, tedavilerin maliyeti, hasta ve yakınlarının isteksizliği, sosyal destek yetersizliği bu alanda rehabilitasyonun önündeki engellerdir [9,10]

KANSER REHABİLİTASYONUNDA EVRELEME :

Dietz kanser rehabilitasyonunu 4 belirgin evreye ayırmıştır

[1] Uzman Doktor, dr_scelik@hotmail.com

riskine göre uygulanır [118].Dünya Sağlık Örgütünün tanımladığı diğer kırık değerlendirme ölçeği FRAX 10 yıllık kırık riskini tanımlamak için kullanılır (www.shef.ac.uk/FRAX/. Hormon tedavisi bu hesaplamada sekonder osteoporoz olarak değerlendirilir [120]. Spinal metastazlarda fraktür riskini belirleyen geçerli ölçümler yoktur. Ancak Denis'in 3 kolon modeli stabiliteyi değerlendirmek için kullanılabilir[121]. Spinal angulasyonun 20° üzerinde olması instabilite lehinedir[122]. Harrington kriterleri ile instabilite ile birlikte nörolojik tutulum da evrelendirilerek değerlendirilir [123]. Evrelere göre farklı tedavi ve rehabilitasyon yaklaşımları, antitümör terapiler ile kortikosteroid , korse, yüzeyel ısıtıcı uygulamalar , TENS veya cerrahi stabilizasyon planlanır[124.]

Riskli lezyonlar için radyoterapi uygulanan hastalarda radyoterapi sonrasında en az 6-8 hafta süren artmış kınk riski vardır; bu dönemde ağırlık verme aşamalı yapılmalıdır.

KARDİAK VE PULMONER TOKSİSİTE

Malign tümörler ve metastatik lezyonlar akciğerleri kalpten daha sık tutar.İlerlemiş kanserlerde metastaza bağlı olarak pulmoner fonksiyonlarda azalma olabilir. İlerlemiş kanser hastalarında şiddetli kas kaybına bağlı olarak kardiak fonksiyonların etkilenmesiyle 'kardiak kaşeksi görülebilir. Kemoterapi,immunoterapi ,göğüs duvarına radyoterapi uygulamaları kardiak ve pulmoner fonksiyonları kanser tedavisi sırasında ve sonrasında etkilemektedir[125]. En sık kullanılan kemoterapi ilaçlarından olan antrasiklinler kardiak fonksiyonları belirgin şekilde ve geri dönüşsüz etkileyerek sol ventrikül fonksiyonunda azalmaya yol açabilir. Meme ve diğer kanserlerde sık kullanılan transtuzumab potansiyel kardiak toksik ajandır. Sistemik ödem, inspiryumda kısalma,dispne ve şiddetli vakalarda akciğer ödemi yapabilmektedir. Bleomisin ve metotreksat sık olarak pulmoner inflamasyon ve fibrosis sonucu pulmoner fonksiyon kısıtlılıklarına yol açar [126].

Göğüs duvarına radyoterapi, kardiyak ve pulmoner fonksiyonları olumsuz etkiler ve zamanla progrese olabilir. Kardiak değişimler tipik olarak radyoterapiyi takiben en az 6-12 ay sonra ortaya çıkmaya başlar.Vital bulguların kanser tedavisi boyunca izlenmesi önerilir. Kardiotoksik tedaviye alınacak olanlara başlangıç ekokardiyogramı yapılıp, hastalığın farklı aşamalarında ve tedavi sonrası tekrarlanabilmektedir.Kemoterapi süresince düşük yoğunluklu egzersiz antrasiklin kaynaklı karditoksisiteye karşı koruyucu olabilir ama egzersiz süresi, sıklığı, yoğunluğu ve tipi konusunda yeterli bilgi yoktur [127].

Bu popülasyonda egzersiz reçete edileceği zaman kemoterapi ve radyoterapi doz şeması,daha önceki kardiak komorbid sorunları,başlangıç vital bulguları gibi risk faktörleri gözönünde bulundurulmalıdır. Ödem takibi yapılmalı ,kardiopulmoner ödem semptomları lenfödem başlangıcından ayırt edilmelidir [126].

Rehabilitasyon uzmanları plan yaparken egzersiz toleransını azaltan risklere karşı farkında olmalıdır. Rehabilitasyon uygulamalarının izleminde hastanın kendi değerlendirmesine dayalı Borg Skalası kullanılır. Aşırı yorgunluk,terleme ve solukluk, nefesin çok kısalması , egzersizin çok zorlayıcı gelmesi gibi semptomlar kardiak fonksiyonların habercisi olması ve tespit edilmesi açısından gözlenmelidir [126].

SONUÇ

Kanser rehabilitasyonu; kanser tanısı konmasıyla başlayan, hasta ve ailesinin de dahil olduğu multidisipliner ekip işidir.Rehabilitasyon sadece egzersiz uygulamaları değil hastanın süreç içerisindeki yetersizliklerine odaklanarak kapsamlı rehabilitasyon çözümleri sunmaktadır.

Anahtar Kelimeler: Kanser,rehabilitasyon,egzersiz

KAYNAKÇA

1. Bluethmann SM, Mariotto AB, Rowland JH. Anticipating the "Silver Tsunami": prevalence trajectories and comorbidity burden among older cancer survivors in the United States. Cancer Epidemiology, Biomarkers & Prevention. 2016; 25(7):1029–1–36.
2. Ganz PA. The status of cancer rehabilitation in the late 1990s.Mayo Clin Proc 1999; 74: 939-40.
3. Schmitz KH, Courneya KS, Matthews C et al. American College of Sports Medicine roundtable on exercise guidelines for cancer survivors. Medicine & Science in Sports & Exercise. 2010 1;42(7):1409–26. doi: 10.1249/MSS.0b013e3181e0c112.
4. Cromes GF Jr (1978) Implementation of interdisciplinary cancer rehabilitation. Rehab Counsel Bull 21(3):230–237

5. Silver JK[1], Raj VS[2], Fu JB[3] Cancer rehabilitation and palliative care: critical components in the delivery of high-quality oncology services Support Care Cancer. 2015 Dec;23(12):3633-43. doi: 10.1007/s00520-015-2916-1
6. Nadler M, Bainbridge D, Tomasone J et al. Oncology care provider perspectives on exercise promotion in people with cancer: an examination of knowledge, practices, barriers, and facilitators. Supportive Care in Cancer. 2017 3 3;7(25):2297–304.
7. Spill GR, Hlubocky FJ, Daugherty CK (2012) Oncologists' and physiatrists attitudes regarding rehabilitation for patients with advanced cancer.PM R 4(2):96–108. doi: 10.1016/j.pmrj.2011.08.539
8. Cherny NI, Catane R, European Society of Medical Oncology Taskforce on P, Supportive C (2003) Attitudes of medical oncologists toward palliative care for patients with advanced and incurable cancer: report on a survey by the European Society of Medical Oncology Taskforce on Palliative and Supportive Care. Cancer 98(11):2502–2510. doi: 10.1002/cncr.11815
9. Movsas SB, Chang VT, Tunkel RS. Rehabilitation needs of an inpatient medical oncology unit. Arch Phys Med Rehabil. 2003 Nov;84(11):1642-6.
10. Palacio A, Calmels P, Genty M, BeuretBlanquart F: Oncology and physical medicine and rehabilitation Ann Phys Rehabil Med 2009;52:568–578.
11. Dietz JH (1981) Rehabilitation oncology. John Wiley & Sons Inc, New York
12. Silver JK, Baima J (2013) Cancer prehabilitation: an opportunity to decrease treatment-related morbidity, increase cancer treatment options,and improve physical and psychological health outcomes. Am J Phys Med Rehabil 92(8):715–727. doi:10.1097/PHM.0b013e31829b4afe
13. Silver JK, Baima J, Mayer RS (2013) Impairment-driven cancer rehabilitation: an essential component of quality care and survivorship. CA Cancer J Clin 63(5):295–317. doi:10.3322/caac.21186
14. Aras M.D. Kanser Rehabilitasyonu. Beyazova M, Kutsal YG. Fiziksel Tıp ve Rehabilitasyon 2. Baskı, 2011; 102: 1593-97.
15. Julie K. Silver & Vishwa S. Raj & Jack B. Fu . Cancer rehabilitation and palliative care: critical componentsin the delivery of high-quality oncology services Support Care Cancer (2015) 23:3633–3643 DOI 10.1007/s00520-015-2916-1
16. Schag CA, Ganz BA, Heinrich RL. Canser rehabilitation evalution system-short form (CARES-SF). A canser spesific rehabilitation and quality of life instrument. Canser 1991; 68: 1406-13
17. Ganz PA, Schag CA, Lee JJ, The CARES: a generic measure of health-related quality of life for patients with cancer. Qual Life Res. 1992 Feb;1(1):19-29.. DOI:10.1007/bf00435432
18. Schag CA, Heinrich RL;discussion 147.Development of a comprehensive quality of life measurement tool: CARES, Oncology (Williston Park). 1990 May;4(5):135-8
19. Dodds TA, Martin DP, Stolow WC. A validition of the functional independence measurement and its performance among rehabilitation inpatients. Arch Phys Med Rehabil 1993; 74: 531-36.
20. Mor V, Laliberte L, Morris JN The Karnofsky performance Status Scala: an examination of its reliability and validity in a research setting. Canser 1994; 53: 2002-7.
21. Newton RU, Galvão DA: Exercise in prevention and management of cancer. (Review). Curr Treat Options Oncol 9: 135-46, 2008.
22. Friedenreich CM, Orenstein MR: Physical activity and cancer prevention: etiologic evidence and biological mechanisms (Review). J Nutr 132(11 Suppl): 3456S-64S, 2002.
23. Friedenreich CM, Orenstein MR. Physical activity and cancer prevention:Etiologic evidence and biological mechanisms. J Nutr 132(11 Suppl):3456S-3464S, 2002
24. Friedenreich CM, Woolcott CG, McTiernan A, et al: Alberta physical activity and breast cancer prevention trial: Sex hormone changes in a year-long exercise intervention among postmenopausal women. J ClinOncol 28:1458-1466, 2010
25. Rock CL, Doyle C, Demark-Wahnefried W . Nutrition and physical activity guidelines for cancer survivors. *CA Cancer J Clin* 2012; 62: 243-274 [PMID: 22539238 DOI: 10.3322/caac.21142]
26. Speck RM, Courneya KS, Masse LC. An update of controlled physical activity trials in cancer survivors: a systematic review and meta-analysis. J Cancer Surviv. 2010; 4(2):87–100
27. Steel JL, Bress K, Popichak L, et al. A Systematic Review of Randomized Controlled Trials Testing the Efficacy of Psychosocial Interventions for Gastrointestinal Cancers. Journal of gastrointestinal cancer. 2014
28. Fong DY, Ho JW, Hui BP, et al. Physical activity for cancer survivors: meta-analysis of randomised controlled trials. BMJ (Clinical research ed). 2012; 344:e70.
29. Zhu G, Zhang X, Wang Y. Effects of exercise intervention in breast cancer survivors: a meta-analysis of 33 randomized controlled trails. Onco Targets Ther. 2016; 9:2153–2168. [PubMed: 27110131]
30. Guinan EM, Connolly EM, Hussey J. Exercise training in breast cancer survivors: a review of trials examining anthropometric and obesity-related biomarkers of breast cancer risk. Physical Therapy Reviews. 2013; 18(2):79–89.
31. Cheema B, Gaul CA, Lane K. Progressive resistance training in breast cancer: a systematic review of clinical trials. Breast cancer research and treatment. 2008; 109(1): 9–26. [PubMed: 17624588]
32. Spence RR, Heesch KC, Brown WJ.Exercise and cancer rehabilitation : a systematic review. Cancer Treat Rev. 2010; 36(2):185–194.
33. Cramer H, Lauche R, Klose P. A systematic review and meta-analysis of exercise interventions for colorectal cancer patients. European journal of cancer care. 2014; 23(1): 3-14. [PubMed: 23834462]
34. Zimmer P, Baumann FT, Oberste M, et al. Effects of Exercise Interventions and Physical Activity Behavior on Cancer Related Cognitive Impairments: A Systematic Review. Biomed Res Int. 2016; 2016:1820954.
35. Meneses-Echavez JF, Correa-Bautista JE,Gonzalez-Jimenez E .The Effect of Exercise Training on Mediators of Inflammation in Breast Cancer Survivors:A Systematic Review with Meta-analysis. Cancer Epidemiol Biomarkers Prev. 2016 Jul;25(7):1009-17. doi: 10.1158/1055-9965.EPI-15-1061.

36. Ashcraft KA, Warner AB, Jones LW, Exercise as Adjunct Therapy in Cancer.. Semin Radiat Oncol. 2019 Jan;29(1):16-24. doi:10.1016/j.semradonc.2018.10.001.
37. Schwartz AL, de Heer HD, Bea JW.Oncology (Williston Park). Author manuscript;available in PMC 2019 February 04 Initiating Exercise Interventions to Promote Wellness in Cancer Patients and Survivors. Oncology (Williston Park).2017 Oct 15;31(10):711-7.
38. Wolin,ScD, Anna L.Schwartz, PhD,Charles E. Matthews. Implementing the Exercise Guidelines for Cancer Survivors Kathleen Y J Support Oncol.2012 ; 10(5): 171-177. doi:10.1016/j.suponc.2012.02.001.
39. Halle, M; Schoenberg, M H, Physical Activity in the Prevention and Treatment of Colorectal Carcinoma, Dtsch Arztebl Int 2009; 106(44): 722-7. DOI: 10.3238/arztebl.2009.0722
40. Ahlberg K, Ekman T, Gaston-Johansson F. Assessment and management of cancer-related fatigue in adults. Lancet. 2003; 362:640–650.
41. Collins JJ, Devine TD, Dick GS, et al.The measurement of symptoms in young children with cancer: the validation of the Memorial Symptom Assessment Scale in children aged 7–12. J Pain Symptom Manage. 2002; 23:10–16.
42. Wagner LI, Cella D. Fatigue and cancer: causes, prevalence and treatment approaches. Br J Cancer. 2004; 91:822–828.
43. Curt GA, Breitbart W, Cella D,Impact of cancer-related fatigue on the lives of patients: new findings from the Fatigue Coalition. Oncologist. 2000;5(5):353-60.
44. Fossa SD, Dahl AA, Loge JH. Fatigue, anxiety, and depression in long-term survivors of testicular cancer. J Clin Oncol. 2003; 21:1249–1254.
45. Haghighat S, Akbari ME, Holakouei K, et al. Factors predicting fatigue in breast cancer patients. Support Care Cancer. 2003; 11:533–538.
46. Ruffer JU, Flechtner H, Tralls P, et al. Fatigue in long-term survivors of Hodgkin's lymphoma; a report from the German Hodgkin Lymphoma Study Group (GHSG). Eur J Cancer. 2003; 39:2179– 2186.
47. Servaes P, Verhagen S, Bleijenberg G. Determinants of chronic fatigue in disease-free breast cancer patients: a cross-sectional study. Ann Oncol. 2002; 13:589–598.
48. Berger AM, Mooney K, Alvarez-Perez A, Cancer-Related Fatigue, Version 2.2015, J Natl Compr Canc Netw. 2015 Aug;13(8):1012-39.. ; National comprehensive cancer network
49. Morrow GR, Andrews PL, Hickok JT, et al. Fatigue associated with cancer and its treatment. Support Care Cancer. 2002; 10:389–398.
50. Puetz TW, Herring MP. Differential effects of exercise on cancer-related fatigue during and following treatment: a meta-analysis. Am J Prev Med. 2012; 43:e1–24. [PubMed: 22813691]
51. Balk J, Day R, Rosenzweig M, Beriwal S. Pilot, randomized, modified, double-blind, placebo-controlled trial of acupuncture for cancer-related fatigue. J Soc Integr Oncol. 2009; 7:4–11
52. Mao JJ, Styles T, Cheville A, et al. Acupuncture for non-palliative radiation therapy-related fatigue: feasibility study. J Soc Integr Oncol. 2009; 7:52–58
53. Duijts SF, Faber MM, Oldenburg HS, et al. Effectiveness of behavioral techniques and physical exercise on psychosocial functioning and health-related quality of life in breast cancer patients and survivors-a meta-analysis. Psychooncology. 2011; 20:115
54. Brown JK. A systematic review of the evidence on symptom management of cancer-related anorexia and cachexia. Oncol Nurs Forum. 2002; 29:517–532
55. Berger AM, VonEssen S, Khun BR, et al. Feasibilty of a sleep intervention during adjuvant breast cancer chemotherapy. Oncol Nurs Forum. 2002; 29:1431–1441.
56. Lyne ME, Coyne PJ, Watson AC. Pain management issues for cancer survivors. Cancer Pract. 2002 May-Jun;10 Suppl 1:S27-32.
57. Cheville AL, Smith SR, Basford JR. Rehabilitation Medicine Approaches to Pain Management. Hematol Oncol Clin North Am. 2018 Jun;32(3):469-482. doi: 10.1016/j.hoc.2018.02.001. Epub 2018 Mar 17.
58. Cleeland CS, Gonin R, Hatfield AK et al. Pain and its treatment in outpatients with metastatic cancer. N Engl J Med 1994; 330: 592–596.
59. Melzack R, Wall PD. Pain mechanisms: a new theory. Science 1965;150(3699):971–9.
60. Stanton-Hicks M, Baron R, Boas R, et al: Complex regional pain syndromes: Guidelines for therapy. Clin J Pain 14:155-166, 1998
61. Cheville AL, Basford JR Role of rehabilitation medicine and physical agents in the treatment of cancer-associated pain. J Clin Oncol. 2014 Jun 1;32(16):1691-702. doi: 10.1200/JCO.2013.53.6680.
62. Almeida MO, Silva BN, Andriolo RB, et al: Conservative interventions for treating exerciserelated musculotendinous, ligamentous and osseous groin pain. Cochrane Database Syst Rev 6:CD009565, 2013
63. Clarkson JE, Worthington HV, Furness S, et al. Interventions for treating oral mucositis for patients with cancer receiving treatment. Cochrane Database Syst Rev 2010;(8):CD001973.
64. Ebert JR, Joss B, Jardine B, et al: Randomized trial investigating the efficacy of manual lymphatic drainage to improve early outcome after total knee arthroplasty. Arch Phys Med Rehabil 94:2103-2111, 2013
65. Ekici G, Bakar Y, Akbayrak T, et al: Comparison of manual lymph drainage therapy and connective tissue massage in women with fibromyalgia: A randomized controlled trial. J Manipulative Physiol Ther 32:127-133, 2009
66. Bloom JE, Rischin A, Johnston RV, et al:Image-guided versus blind glucocorticoid injection for shoulder pain. Cochrane Database Syst Rev 8:CD009147, 2012
67. Barr S, Cerisola FL, Blanchard V: Effectiveness of corticosteroid injections compared with physiotherapeutic interventions for lateral epicondylitis: A systematic review. Physiotherapy 95:251-265, 2009
68. Blanchard V, Barr S, Cerisola FL: The effectiveness of corticosteroid injections compared with physiotherapeutic interventions for adhesive capsulitis: A systematic review. Physiotherapy 96:95-107,2010
69. Alvarez DJ, Rockwell PG: Trigger points:Diagnosis and management. Am Fam Physician 65:653-660, 2002

70. Gerwin RD: Classification, epidemiology, and natural history of myofascial pain syndrome. Curr Pain Headache Rep 5:412-420, 200
71. Patel KC, Gross A, Graham N, et al:Massage for mechanical neck disorders. Cochrane Database Syst Rev 9:CD004871, 2012
72. Stubblefield MD, Burstein HJ, Burton AW, et al. NCCN task force report: management of neuropathy in cancer. J Natl Compr Canc Netw. 2009; 7(suppl 5):S1–S26. quiz S27-28.
73. Winters-Stone KM, Horak F, Jacobs PG, et al. Falls, Functioning, and Disability Among Women With Persistent Symptoms of Chemotherapy-Induced Peripheral Neuropathy. J Clin Oncol. 2017:JCO2016713552.
74. Wildes TM, Dua P, Fowler SA, et al. Systematic review of falls in older adults with cancer. Journal of geriatric oncology. 2015; 6(1):70–83.
75. Michael D. Stubblefield, MD, Nandita Keole, MD Upper Body Pain and Functional Disorders in Patients With Breast Cancer, PMR 2014;6:170-183
76. Schnur JB, Love B, Scheckner BL, Green S. A systematic review of patient-rated measures of radiodermatitis in breast cancer radiotherapy. Am J Clin Oncol 2011;34:529-536.
77. Ebaugh D, Spinelli B, Schmitz KH. Shoulder impairments and their association with symptomatic rotator cuff disease in breast cancer survivors. Med Hypotheses 2011;77:481-487
78. Stubblefield MD, Custodio CM. Upper-extremity pain disorders in breast cancer. Arch Phys Med Rehabil 2006; 87(3 Suppl 1):S96-9.
79. Sheridan MA, Hannafin JA. Upper extremity: Emphasis on frozenshoulder. Orthop Clin North Am 2006;37:531-539.
80. Cheville AL, Tchou J. Barriers to rehabilitation following surgery for primary breast cancer. J Surg Oncol 2007;95:409-418.
81. Chaudhury S, Gwilym SE, Moser J, Carr AJ. Surgical options for patients with shoulder pain. Nat Rev Rheumatol 2010;6:217-226
82. Winters-Stone KM, Schwartz AL, Hayes SC, Fabian CJ, Campbell KL. A prospective model of care for breast cancer rehabilitation: Bone health and arthralgias. Cancer 2012;118(8 suppl):2288-2299.
83. Crew KD, Greenlee H, Capodice J, et al. Prevalence of joint symptoms in postmenopausal women taking aromatase inhibitors for early-stage breast cancer. J Clin Oncol 2007;25:3877-3883.
84. Robidoux A, Rich E, Bureau NJ, et al. A prospective pilot study investigating the musculoskeletal pain in postmenopausal breast cancer patients receiving aromatase inhibitor therapy. Curr Oncol 2011;18:285-294.
85. Winters-Stone KM, Schwartz AL, Hayes SC. A prospective model of care for breast cancer rehabilitation: Bone health and arthralgias. Cancer 2012;118(8 suppl):2288-2299
86. Gaillard S, Stearns V. Aromatase inhibitor-associated bone and musculoskeletal effects: New evidence defining etiology and strategies for management. Breast Cancer Res 2011;13:205
87. Caridi JM, Pumberger M, Hughes AP. Cervical radiculopathy: A review. HSS J 2011;7:265-272.
88. Jaeckle KA. Neurologic manifestations of neoplastic and radiationinduced plexopathies. Semin Neurol 2010;30:254-262.
89. Bajrovic A,Rades D,Fehlauer F et al.Is there a life-long risk of brachial plexopathy after radiotherapy of supraclavicular lymph nodes in breast cancer patients? Radiother Oncol 2004;71:297-301
90. Jaeckle KA. Neurologic manifestations of neoplastic and radiation induced plexopathies. Semin Neurol 2010;30:254-262
91. Kori SH, Foley KM, Posner JB. Brachial plexus lesions in patients with cancer: 100 cases. Neurology 1981;31:45-50
92. Postma TJ, Vermorken JB, Liefting AJ. Paclitaxel-induced neuropathy. Ann Oncol 1995;6:489-94.
93. Chaudhry V, Chaudhry M, Crawford TO. Toxic neuropathy in patients with pre-existing neuropathy. Neurology 2003;60:337-40.
94. Cheville AL. Current and future trends in lymphedema management: implications for women's health. Phys Med Rehabil Clin N Am 2007;18:539-53.
95. Torres Lacomba M, Mayoral Del Moral O, Coperias Zazo JL . Axillary web syndrome after axillary dissection in breast cancer: A prospective study. Breast Cancer Res Treat 2009;117:625-630.
96. Capozzi LC, Dolgoy ND, McNeely ML. Physical Rehabilitation and Occupational Therapy.Oral Maxillofac Surg Clin North Am. 2018 Nov;30(4):471-486. doi: 10.1016/j.coms.2018.06.008.
97. Fox Chase Cancer Center Department of Rehabilitation Medicine. Rehabilitation Protocol for Neck Dissection, Philadelphia,PA,US.
98. Ünsal-Delialioğlu S, Dalyan-Aras M Baş ve Boyun Kanserlerinde Rehabilitasyon, Türkiye Klinikleri, Fiziksel Tıp Ve Rehabilitasyon, Kanser Rehabilitasyonu Özel Sayısı, 2006;2(10):30-8
99. Cheville A.Cancer Rehabilitation. In: Physical Medicine &Rehabilitation,Ed:Braddom RL,Saunders Company,Third Edition,2007,1369-98
100. Kizilay A, Kalcioglu MT, Saydam L, Ersoy Y. A new shoulder orthosis for paralysis of the trapezius muscle after radical neck dissection: A preliminary report. Eur Arch Otorhinolaryngol 2006;263:477-80.
101. Glastonbury CM, Parker EE, Hoang JK. The postradiation neck: Evaluating response to treatment and recognizing complications. AJR Am J Roentgenol 2010;195:w164-71.
102. Karthikeyan Guru, Udaya Kumar Manoor1, Sanjay Sudhakar Supe A Comprehensive Review of Head and Neck Cancer Rehabilitation: Physical Therapy Perspectives,Indian Journal of Palliative Care / May-Aug 2012 / Vol-18 / Issue-2
103. M, Williams GR, Campbell C, et al. Occupational therapy for adults with cancer: why it matters. Oncologist 2016;21(3):314–9.
104. Silver HJ, Dietrich MS, Murphy BA. Changes in body mass, energy balance, physical function, and inflammatory state in patients with locally advanced head and neck cancer treated with concurrent chemoradiation after low-dose induction chemotherapy

105. Schmitz KH, Courneya KS, Matthews C, et al. American College of Sports Medicine roundtable on exercise guidelines for cancer survivors. Med Sci Sports Exerc 2010;42(7):1409–26
106. Bensadoun RJ, Riesenbeck D, Lockhart PB, et al. A systematic review of trismus induced by cancer therapies in head and neck cancer patients. Support Care Cancer 2010;18:1033–1038
107. Brodsky MB, McFarland DH, Dozier TS *et al*. Respiratory-swallow phase patterns and their relationship to swallowing impairment in patients treated for oropharyngeal cancer. Head Neck 2010;32:481-9.
108. Manikantan K, Khode S, Sayed SI, Roe J, *et al*. Dysphagia in head and neck cancer. Cancer Treat Rev 2009;35:724-32.
109. Mittal BB, Pauloski BR, Haraf DJ *etal*. Swallowing dysfunction—preventative and rehabilitation strategies in patients with head-and-neck cancers treated with surgery, radiotherapy, and chemotherapy: a critical review. Int J Radiat Oncol Biol Phys 2003;57:1219- 30.
110. Deng J, Ridner SH, Dietrich MS *et al*. Prevalence of Secondary Lymphedema in Patients with Head and Neck Cancer. J Pain Symptom Manage 2012;43:244-52.
111. Silverman AT, Hoffman R, Cohen M. Severe cheek and lower eyelid lymphedema after resection of oropharyngeal tumor and radiation. J Craniofac Surg 2010;21:598-601.
112. Drake MT. Osteoporosis and cancer. Curr Osteoporos Rep 2013;11: 163-170.
113. Wooldridge JE, Anderson CM, Perry MC. Corticosteroids in advanced cancer. Oncology (Williston Park) 2001;15:225-234; discussion 34-6.
114. Winters-Stone KM, Dobek JC, Bennett JA. Skeletal response to resistance and impact training in prostate cancer survivors. Med Sci Sports Exerc 2014; 46:1482-1488.
115. Kanis JA, Delmas P, Burckhardt P.Guidelines for diagnosis and management of osteoporosis. The European Foundation for Osteoporosis and Bone Disease. Osteoporos Int 1997;7:390-406.
116. Sonmez M, Akagun T, Topbas M, et al. Effect of pathologic fractures on survival in multiple myeloma patients: A case control study. J Exp Clin Cancer Res 2008;27:11.
117. Saad F, Lipton A, Cook . Pathologic fractures correlate with reduced survival in patients with malignant bone disease. Cancer 2007;110:1860-1867.
118. Jawad MU, Scully SP. In Brief: Classifications in Brief: Mirels' classification: Metastatic disease in long bones and impending pathologic fracture. Clin Orthop Rel Res 2010;468:2825-2827.
119. Sheill G , Guinan EM, Peat N , Considerations for Exercise Prescription in Patients With Bone Metastases: A Comprehensive Narrative Review. PM R. 2018 Aug;10(8):843-864. doi: 10.1016/j.pmrj.2018.02.006.
120. Saylor PJ, Kaufman DS, Michaelson MD. Application of a fracture risk algorithm to men treated with androgen deprivation therapy for prostate cancer. J Urol 2010;183:2200-2205.
121. Denis F. Spine instability as defined by the three-column spine concept in acute spinal trauma. Clin Orthop 1984;189:65-76.
122. O'Connor MI, Currier BL. Metastatic disease of the spine. Orthopedics 1992;15:611-620
123. Harrington KD.Metastatic disease of the spine J Bone Joint Surg Am 1986;68:110
124. Vargo MM,Gerber LH.Rehabilitation for patients with cancer diagnosis .In:Physical Medicine & Rehabilitation. DeLisa JA,Gans BM,editors. Lippincott Williams & Wilkins,4th Edition,2005,1771-94
125. Bovelli D, Plataniotis G, Roila F. Cardiotoxicity of chemotherapeutic agents and radiotherapy-related heart disease: ESMO Clinical Practice Guidelines. Annals of oncology. 2010; 21(suppl_5):v277–v282.
126. Maltser S, Cristian A, Silver JK A Focused Review of Safety Considerations in Cancer Rehabilitation PM R. 2017 Sep;9(9S2):S415-S428. doi: 10.1016/j.pmrj.2017.08.403..
127. Chen JJ, Wu P-T, Middlekauff HR, Nguyen K-L. Aerobic exercise in anthracycline-induced cardiotoxicity: a systematic review of current evidence and future directions. American Journal of Physiology-Heart and Circulatory Physiology. 2017; 312(2):H213–H222.