

BÖLÜM 14

ADRENOKORTİKAL KARSİNOMLAR

Özlem AYDIN İSAK¹

GİRİŞ

Adrenokortikal karsinomlar (AKK), nadir görülen, sıklıkla agresif seyreden tümörlerdir. Bazen fonksiyonel olup cushing sendromuna veya virilizasyona sebep olarak, bazen de fonksiyonel olmayan batın içi kitle ile veya tesadüfi bir bulgu ile ortaya çıkarlar.

Epidemiyoloji

İnsidansı ABD’de milyonda 0,72 iken dünya çapında milyonda 0,5-2’dir(1). İlginç bir şekilde, bir dizi çevresel ve genetik risk faktörünün tanımlandığı Güney ve Güneydoğu Brezilya’daki çocuklarda, insidans yaklaşık 10-15 kat daha yüksektir(2). AKK, iki modlu bir yaşı dağılımı gösterir, 5 yaş altı çocuklarda ve 40-60 yaş erişkinde sıklıkla görülür. Çocukluk kanserlerinin %1,3’ünü, yetişkin kanserlerini %0,02-0,2’ini oluşturur. Kadınlarda, erkeklerde kıyasla %1,5-2,5 kat fazla görülür. Yetişkinlerde ACC ile ilişkili durumlar arasında Li-Fraumeni sendromu, Ailesel Adenomatoz Polipozis (FAP), Multiple Endokrin Neoplazi tip I ve Lynch sendromu sayılabilir (1, 3, 4).

Klinik

AKK, üç farklı klinik durumla karşımıza gelebilir. Hastaların yaklaşık %40-60’ı artmış hormon salinimına bağlı semptomlarla, üçte biri spesifik olmayan semptomlarla ve %20-30’u başka nedenlerle yapılan görüntülemeler sonucunda tespitlenen tanı alır (4, 5).

Hormon salinimına bağlı semptomlar hiperkortizolemi ve hiperandrojenemiye bağlıdır. Hiperkortizolemi pletore, diabetes mellitus, osteoporoz ve kas atrofisine neden olabilir. Eş zamanlı olarak glukokortikoid aracılı mineralokortikoid reseptör aktivasyonu, hipokalemi ve hipertansiyon ile kendini gösterebilir. Hiperkortizolemi ile prezente olanlarda genellikler hızla ilerleyen ve belirgin kas güçsüzlüğü de eşlik edebilir. Hiperandrojenemi erkek tipi kelliğ, virilizasyon, hir-

¹ Uzm. Dr, Düzce Atatürk Devlet Hastanesi, Tibbi Onkoloji Kliniği, ozlemaydin_87@hotmail.com

KAYNAKLAR

1. Bilimoria KY, Shen WT, Elaraj D, Bentrem DJ, Winchester DJ, Kebebew E, et al. Adrenocortical carcinoma in the United States: treatment utilization and prognostic factors. *Cancer.* 2008;113(11):3130-6.
2. Pinto EM, Billerbeck AE, Villares MC, Domenice S, Mendonça BB, Latronico AC. Founder effect for the highly prevalent R337H mutation of tumor suppressor p53 in Brazilian patients with adrenocortical tumors. *Arquivos brasileiros de endocrinologia e metabologia.* 2004;48(5):647-50.
3. Else T. Association of adrenocortical carcinoma with familial cancer susceptibility syndromes. *Molecular and cellular endocrinology.* 2012;351(1):66-70.
4. Else T, Kim AC, Sabolch A, Raymond VM, Kandathil A, Caoili EM, et al. Adrenocortical carcinoma. *Endocrine reviews.* 2014;35(2):282-326.
5. Puglisi S, Perotti P, Pia A, Reimondo G, Terzolo M. Adrenocortical Carcinoma with Hypercortisolism. *Endocrinology and metabolism clinics of North America.* 2018;47(2):395-407.
6. Abiven G, Coste J, Groussin L, Anract P, Tissier F, Legmann P, et al. Clinical and biological features in the prognosis of adrenocortical cancer: poor outcome of cortisol-secreting tumors in a series of 202 consecutive patients. *The Journal of clinical endocrinology and metabolism.* 2006;91(7):2650-5.
7. Sturgeon C, Shen WT, Clark OH, Duh QY, Kebebew E. Risk assessment in 457 adrenal cortical carcinomas: how much does tumor size predict the likelihood of malignancy? *Journal of the American College of Surgeons.* 2006;202(3):423-30.
8. Fassnacht M, Allolio B. Clinical management of adrenocortical carcinoma. *Best practice & research Clinical endocrinology & metabolism.* 2009;23(2):273-89.
9. Gröndal S, Eriksson B, Hagenäs L, Werner S, Curstedt T. Steroid profile in urine: a useful tool in the diagnosis and follow up of adrenocortical carcinoma. *Acta endocrinologica.* 1990;122(5):656-63.
10. Nakamura Y, Yamazaki Y, Felizola SJ, Ise K, Morimoto R, Satoh F, et al. Adrenocortical carcinoma: review of the pathologic features, production of adrenal steroids, and molecular pathogenesis. *Endocrinology and metabolism clinics of North America.* 2015;44(2):399-410.
11. Bertherat J, Bertagna X. Pathogenesis of adrenocortical cancer. *Best practice & research Clinical endocrinology & metabolism.* 2009;23(2):261-71.
12. Egbert N, Elsayes KM, Azar S, Caoili EM. Computed tomography of adrenocortical carcinoma containing macroscopic fat. *Cancer imaging : the official publication of the International Cancer Imaging Society.* 2010;10(1):198-200.
13. Becherer A, Vierhapper H, Pötzi C, Karanikas G, Kurtaran A, Schmaljohann J, et al. FDG-PET in adrenocortical carcinoma. *Cancer biotherapy & radiopharmaceuticals.* 2001;16(4):289-95.
14. Mackie GC, Shulkin BL, Ribeiro RC, Worden FP, Gauger PG, Mody RJ, et al. Use of [18F] fluorodeoxyglucose positron emission tomography in evaluating locally recurrent and metastatic adrenocortical carcinoma. *The Journal of clinical endocrinology and metabolism.* 2006;91(7):2665-71.
15. Hahner S, Stuermer A, Kreissl M, Reiners C, Fassnacht M, Haenscheid H, et al. [123 I]Iodometomidate for molecular imaging of adrenocortical cytochrome P450 family 11B enzymes. *The Journal of clinical endocrinology and metabolism.* 2008;93(6):2358-65.
16. Bharwani N, Rockall AG, Sahdev A, Gueorguiev M, Drake W, Grossman AB, et al. Adrenocortical carcinoma: the range of appearances on CT and MRI. *AJR American journal of roentgenology.* 2011;196(6):W706-14.
17. Jhala NC, Jhala D, Eloubeidi MA, Chhieng DC, Crowe DR, Roberson J, et al. Endoscopic ultrasound-guided fine-needle aspiration biopsy of the adrenal glands: analysis of 24 patients. *Cancer.* 2004;102(5):308-14.
18. Medeiros LJ, Weiss LM. New developments in the pathologic diagnosis of adrenal cortical neoplasms. A review. *American journal of clinical pathology.* 1992;97(1):73-83.

19. Aubert S, Wacrenier A, Leroy X, Devos P, Carnaille B, Proye C, et al. Weiss system revisited: a clinicopathologic and immunohistochemical study of 49 adrenocortical tumors. *The American journal of surgical pathology*. 2002;26(12):1612-9.
20. Fassnacht M, Johanssen S, Quinkler M, Bucsky P, Willenberg HS, Beuschlein F, et al. Limited prognostic value of the 2004 International Union Against Cancer staging classification for adrenocortical carcinoma: proposal for a Revised TNM Classification. *Cancer*. 2009;115(2):243-50.
21. Schteingart DE, Doherty GM, Gauger PG, Giordano TJ, Hammer GD, Korobkin M, et al. Management of patients with adrenal cancer: recommendations of an international consensus conference. *Endocrine-related cancer*. 2005;12(3):667-80.
22. Weiss LM, Medeiros LJ, Vickery AL, Jr. Pathologic features of prognostic significance in adrenocortical carcinoma. *The American journal of surgical pathology*. 1989;13(3):202-6.
23. Allolio B, Hahner S, Weismann D, Fassnacht M. Management of adrenocortical carcinoma. *Clinical endocrinology*. 2004;60(3):273-87.
24. Fassnacht M, Kroiss M, Allolio B. Update in adrenocortical carcinoma. *The Journal of clinical endocrinology and metabolism*. 2013;98(12):4551-64.
25. Wängberg B, Khorram-Manesh A, Jansson S, Nilsson B, Nilsson O, Jakobsson CE, et al. The long-term survival in adrenocortical carcinoma with active surgical management and use of monitored mitotane. *Endocrine-related cancer*. 2010;17(1):265-72.
26. Harrison LE, Gaudin PB, Brennan MF. Pathologic features of prognostic significance for adrenocortical carcinoma after curative resection. *Archives of surgery (Chicago, Ill : 1960)*. 1999;134(2):181-5.
27. Reibetanz J, Jurowich C, Erdogan I, Nies C, Rayes N, Dralle H, et al. Impact of lymphadenectomy on the oncologic outcome of patients with adrenocortical carcinoma. *Annals of surgery*. 2012;255(2):363-9.
28. Stojadinovic A, Ghossein RA, Hoos A, Nissan A, Marshall D, Dudas M, et al. Adrenocortical carcinoma: clinical, morphologic, and molecular characterization. *Journal of clinical oncology : official journal of the American Society of Clinical Oncology*. 2002;20(4):941-50.
29. Bertagna C, Orth DN. Clinical and laboratory findings and results of therapy in 58 patients with adrenocortical tumors admitted to a single medical center (1951 to 1978). *The American journal of medicine*. 1981;71(5):855-75.
30. Srour V, Bancos I, Daher M, Lee JE, Graham PH, Karam JA, et al. Cytoreductive Surgery of the Primary Tumor in Metastatic Adrenocortical Carcinoma: Impact on Patients' Survival. *The Journal of clinical endocrinology and metabolism*. 2022;107(4):964-71.
31. Wajchenberg BL, Albergaria Pereira MA, Medonca BB, Latronico AC, Campos Carneiro P, Alves VA, et al. Adrenocortical carcinoma: clinical and laboratory observations. *Cancer*. 2000;88(4):711-36.
32. Bednarski BK, Habra MA, Phan A, Milton DR, Wood C, Vauthey N, et al. Borderline resectable adrenal cortical carcinoma: a potential role for preoperative chemotherapy. *World journal of surgery*. 2014;38(6):1318-27.
33. Beuschlein F, Weigel J, Saeger W, Kroiss M, Wild V, Daffara F, et al. Major prognostic role of Ki67 in localized adrenocortical carcinoma after complete resection. *The Journal of clinical endocrinology and metabolism*. 2015;100(3):841-9.
34. Berruti A FM, Libe R, Lacroix A, Kastelan D, Haak H, Arlt W First randomized trial on adjuvant mitotane in adrenocortical carcinoma patients: The Adjuvo study. *J Clin Oncol*. 2022;40(6S).
35. Fassnacht M, Libé R, Kroiss M, Allolio B. Adrenocortical carcinoma: a clinician's update. *Nature reviews Endocrinology*. 2011;7(6):323-35.
36. Miller BS, Gauger PG, Hammer GD, Giordano TJ, Doherty GM. Proposal for modification of the ENSAT staging system for adrenocortical carcinoma using tumor grade. *Langenbeck's archives of surgery*. 2010;395(7):955-61.
37. Giordano TJ. The argument for mitotic rate-based grading for the prognostication of adrenocortical carcinoma. *The American journal of surgical pathology*. 2011;35(4):471-3.

Adrenokortikal Karsinomlar

38. Berruti A, Fassnacht M, Baudin E, Hammer G, Haak H, Lebouilleux S, et al. Adjuvant therapy in patients with adrenocortical carcinoma: a position of an international panel. *Journal of clinical oncology : official journal of the American Society of Clinical Oncology*. 2010;28(23):e401-2; author reply e3.
39. Haak HR, Hermans J, van de Velde CJ, Lentjes EG, Goslings BM, Fleuren GJ, et al. Optimal treatment of adrenocortical carcinoma with mitotane: results in a consecutive series of 96 patients. *British journal of cancer*. 1994;69(5):947-51.
40. van Slooten H, Moolenaar AJ, van Seters AP, Smeenk D. The treatment of adrenocortical carcinoma with o,p'-DDD: prognostic implications of serum level monitoring. *European journal of cancer & clinical oncology*. 1984;20(1):47-53.
41. Fujii Y, Kageyama Y, Kawakami S, Masuda H, Arisawa C, Akamatsu H, et al. Successful long-term disease-free survival following multimodal treatments in a patient with a repeatedly recurrent refractory adrenal cortical carcinoma. *International journal of urology : official journal of the Japanese Urological Association*. 2003;10(8):445-8.
42. Bellantone R, Ferrante A, Boscherini M, Lombardi CP, Crucitti P, Crucitti F, et al. Role of re-operation in recurrence of adrenal cortical carcinoma: results from 188 cases collected in the Italian National Registry for Adrenal Cortical Carcinoma. *Surgery*. 1997;122(6):1212-8.
43. Dy BM, Strajina V, Cayo AK, Richards ML, Farley DR, Grant CS, et al. Surgical resection of synchronously metastatic adrenocortical cancer. *Annals of surgical oncology*. 2015;22(1):146-51.
44. Wood BJ, Abraham J, Hvizda JL, Alexander HR, Fojo T. Radiofrequency ablation of adrenal tumors and adrenocortical carcinoma metastases. *Cancer*. 2003;97(3):554-60.
45. Vassilopoulou-Sellin R, Guinee VF, Klein MJ, Taylor SH, Hess KR, Schultz PN, et al. Impact of adjuvant mitotane on the clinical course of patients with adrenocortical cancer. *Cancer*. 1993;71(10):3119-23.
46. Haq MM, Legha SS, Samaan NA, Bodey GP, Burgess MA. Cytotoxic chemotherapy in adrenal cortical carcinoma. *Cancer treatment reports*. 1980;64(8-9):909-13.
47. Chun HG, Yagoda A, Kemeny N, Watson RC. Cisplatin for adrenal cortical carcinoma. *Cancer treatment reports*. 1983;67(5):513-4.
48. van Slooten H, van Oosterom AT. CAP (cyclophosphamide, doxorubicin, and cisplatin) regimen in adrenal cortical carcinoma. *Cancer treatment reports*. 1983;67(4):377-9.
49. Haak HR, van Seters AP, Moolenaar AJ, Fleuren GJ. Expression of P-glycoprotein in relation to clinical manifestation, treatment and prognosis of adrenocortical cancer. *Eur J Cancer*. 1993;29a(7):1036-8.
50. Flynn SD, Murren JR, Kirby WM, Honig J, Kan L, Kinder BK. P-glycoprotein expression and multidrug resistance in adrenocortical carcinoma. *Surgery*. 1992;112(6):981-6.
51. Berruti A, Terzolo M, Sperone P, Pia A, Della Casa S, Gross DJ, et al. Etoposide, doxorubicin and cisplatin plus mitotane in the treatment of advanced adrenocortical carcinoma: a large prospective phase II trial. *Endocrine-related cancer*. 2005;12(3):657-66.
52. Fassnacht M, Terzolo M, Allolio B, Baudin E, Haak H, Berruti A, et al. Combination chemotherapy in advanced adrenocortical carcinoma. *The New England journal of medicine*. 2012;366(23):2189-97.
53. Raj N, Zheng Y, Kelly V, Katz SS, Chou J, Do RKG, et al. PD-1 Blockade in Advanced Adrenocortical Carcinoma. *Journal of clinical oncology : official journal of the American Society of Clinical Oncology*. 2020;38(1):71-80.