

## Bölüm 20

# ENDOKRİN BOZUKLUKLAR VE KARDİYOVASKÜLER HASTALIKLAR

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Kardiyovasküler hastalıklar tüm dünyada mortalite ve morbiditenin en önemli sebebidir. Bu hastalıklar ekonomik yük oluşturmakta olup önümüzdeki yıllarda daha da artması beklenmektedir [1]. Endokrin sistem vücutta çok çeşitli etkilere sahip olan bezlerden oluşan kompleks bir sistemdir. Endokrin sistemin,kardiyovasküler sistemi modüle eden birçok etkiye sahip olduğu kanıtlanmıştır. Bununla birlikte hormonların artması veya azalması kardiyovasküler hastalıkların patogenezinde önemli bir rol oynamaktadır[2].Biz de bu bölümde endokrin bozukluklar ve kardiyovasküler hastalıklar arasındaki ilişkilerden bahsedeceğiz.

### HİPOFİZ BEZİ

Hipofiz bezi 2 ayrı anatomik kısımdan oluşur. Ön hipofiz;6 farklı hücre tipinden meydana gelmiştir ;bu hücre tiplerinden insan büyüme hormonu (hGH) salgılayan somatotropik hücreler, adrenokortikotropik hormon (ACTH) salgılayan kortikotropik hücreler kardiyak hastalığa sebep olabilirler. Arka hipofiz ya da nörohipofiz olarak adlandırılan bölümden ise vazopressin (ADH) ve oksitosin salgılanır.

### Büyüme Hormonu (GH)

Erişkinlerde epifizlerin kapanmasından önce aşırı büyüme hormonu salgılanması gigantizme sebep olurken, epifizlerin kapanmasından sonra aşırı salgılanması akromegaliyle sonuçlanır. Büyüme hormonu etkilerini 2 şekilde gösterir. Birinci etkisi; hedef hücreler üzerindeki özgün GH reseptörlerine bağlanması ile oluşur. Bu reseptörler iskelet kası, kalp kası, yağ doku, böbrek, karaciğer ve fetal dönemde birçok dokuda tespit edilmiştir. İkincisi ise İGF-1(insülin benzeri büyüme faktörü) sentezini arttırmasıdır. Bu protein esas olarak karaciğerde üretilir ancak diğer hücreler de GH etkisi altında İGF-1'i üretebilir.

### Akromegalinin Kardiyovasküler Belirtileri

Akromegali ve gigantizm, kardiyovasküler hastalıklarla belirgin mortalite ve morbidite ile ilişkilidir. Tedavi edilmemiş GH yüksekliği olan hastaların %20

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## KAYNAKÇA

1. Grande, D., Terlizze, P., Gioia, M. I., Parisi, G., Giagulli, V. A., Triggiani, V., & Iacoviello, M. (2019). New frontiers in the therapeutic approach of patients with cardiovascular and endocrine diseases. *Endocrine, Metabolic & Immune Disorders Drug Targets*. <https://doi.org/10.2174/1871530319666190101151542>
2. Cachofeiro, V., & Lahera, V. (2014, April). The endocrine and cardiovascular systems: a close liaison. *Hormone Molecular Biology and Clinical Investigation*. Germany. <https://doi.org/10.1515/hmbci-2014-0018>
3. Klein, I. (2015), Endocrine Disorders and Cardiovascular Disease. D.P.Z. Douglas L. Mann, Peter Libby, Robert O. Bonow, (Eds.), *Braunwald's heart disease a textbook of cardiovascular medicine* (p. 1793-1808)
4. Jarneson J. L. (2013) *Harrison's Principles Of Internal Medicine Türkçe*. (Kadir Bibe-roğlu Çev. Ed.). İstanbul: Nobel Tıp Kitabevleri
5. Carpenter PC. Diagnostic evaluation of Cushing's syndrome. (1988) *Endocrinol Metab Clin North Am* ; 17:445.
6. Lindholm J, Juul S, Jørgensen JO, et al. (2011) Incidence and late prognosis of cushing's syndrome: a population-based study. *J Clin Endocrinol Metab* ; 86:117.
7. Neary NM, Booker OJ, Abel BS, et al. (2013) Hypercortisolism is associated with increased coronary arterial atherosclerosis: analysis of noninvasive coronary angiography using multidetector computerized tomography. *J Clin Endocrinol Metab* ; 98:2045.
8. Mancini T, Kola B, Mantero F, et al. (2004) High cardiovascular risk in patients with Cushing's syndrome according to 1999 WHO/ISH guidelines. *Clin Endocrinol (Oxf)* ; 61:768.
9. Torpy DJ, Mullen N, Ilias I, Nieman LK. (2002) Association of hypertension and hypokalemia with Cushing's syndrome caused by ectopic ACTH secretion: a series of 58 cases. *Ann N Y Acad Sci* ; 970:134.
10. Ross EJ, Linch DC. (1982) Cushing's syndrome--killing disease: discriminatory value of signs and symptoms aiding early diagnosis. *Lancet* ; 2:646.
11. Sjöberg HE, Blombäck M, Granberg PO. (1976) Thromboembolic complications, heparin treatment in increase in coagulation factors in Cushing's syndrome. *Acta Med Scand*; 199:95.
12. Boscaro M, Sonino N, Scarda A, et al. (2002) Anticoagulant prophylaxis markedly reduces thromboembolic complications in Cushing's syndrome. *J Clin Endocrinol Metab*; 87:3662.
13. Van der Pas R, Leebeek FW, Hoffland LJ, et al. (2013) Hypercoagulability in Cushing's syndrome: prevalence, pathogenesis and treatment. *Clin Endocrinol (Oxf)*; 78:481.
14. Isidori AM, Minnetti M, Sbardella E, et al. (2015) Mechanisms in endocrinology: The spectrum of haemostatic abnormalities in glucocorticoid excess and defect. *Eur J Endocrinol*; 173:R101.
15. Terzolo M, Allasino B, Bosio S, et al. (2004) Hyperhomocysteinemia in patients with Cushing's syndrome. *J Clin Endocrinol Metab*; 89:3745.
16. Ross EJ, Marshall-Jones P, Friedman M. (1966) Cushing's syndrome: diagnostic criteria. *Q J Med*; 35:149.
17. Shibusawa N, Yamada M, Hashida T, et al. (2013) Dilated cardiomyopathy as a presenting feature of Cushing's syndrome. *Intern Med* ; 52:1067.

18. Frustaci A, Letizia C, Verardo R, et al. (2016) Atrogin-1 Pathway Activation in Cushing Syndrome Cardiomyopathy. *J Am Coll Cardiol*; 67:116.
19. Tauchmanová L, Rossi R, Biondi B, et al. (2002) Patients with subclinical Cushing's syndrome due to adrenal adenoma have increased cardiovascular risk. *J Clin Endocrinol Metab*; 87:4872.
20. Debono M, Bradburn M, Bull M, et al. (2014) Cortisol as a marker for increased mortality in patients with incidental adrenocortical adenomas. *J Clin Endocrinol Metab*; 99:4462.
21. Di Dalmazi G, Vicennati V, Garelli S, et al. (2014) Cardiovascular events and mortality in patients with adrenal incidentalomas that are either non-secreting or associated with intermediate phenotype or subclinical Cushing's syndrome: a 15-year retrospective study. *Lancet Diabetes Endocrinol*; 2:396.
22. Klein I, Ojamaa K. (2001) Thyroid hormone and the cardiovascular system. *N Engl J Med*; 344:501.
23. Brent GA. (1994) The molecular basis of thyroid hormone action. *N Engl J Med*; 331:847.
24. Davis PJ, Davis FB. (2002) Nongenomic actions of thyroid hormone on the heart. *Thyroid*; 12:459.
25. Osman F, Franklyn JA, Holder RL, et al. (2007) Cardiovascular manifestations of hyperthyroidism before and after antithyroid therapy: a matched case-control study. *J Am Coll Cardiol* ; 49:71.
26. Osman F, Franklyn JA, Holder RL, et al. (2007) Cardiovascular manifestations of hyperthyroidism before and after antithyroid therapy: a matched case-control study. *J Am Coll Cardiol* ; 49:71.
27. Biondi B, Fazio S, Carella C, et al. (1993) Cardiac effects of long term thyrotropin-suppressive therapy with levothyroxine. *J Clin Endocrinol Metab*; 77:334.
28. Dörr M, Wolff B, Robinson DM, et al. (2005) The association of thyroid function with cardiac mass and left ventricular hypertrophy. *J Clin Endocrinol Metab* 2005; 90:673.
29. Dahl P, Danzi S, Klein I. (2008) Thyrotoxic cardiac disease. *Curr Heart Fail Rep*; 5:170.
30. Kellett HA, Sawers JS, Boulton FE, et al. (1986) Problems of anticoagulation with warfarin in hyperthyroidism. *Q J Med* ; 58:43.
31. Wustmann K, Kucera JP, Zanchi A, et al. (2008) Activation of electrical triggers of atrial fibrillation in hyperthyroidism. *J Clin Endocrinol Metab*; 93:2104.
32. Frost L, Vestergaard P, Mosekilde L. (2004) Hyperthyroidism and risk of atrial fibrillation or flutter: a population-based study. *Arch Intern Med*; 164:1675.
33. Petersen P. (1990) Thromboembolic complications in atrial fibrillation. *Stroke*; 21:4.
34. Siu CW, Yeung CY, Lau CP, et al. (2007) Incidence, clinical characteristics and outcome of congestive heart failure as the initial presentation in patients with primary hyperthyroidism. *Heart* ; 93:483.
35. Ismail HM. (2007) Reversible pulmonary hypertension and isolated right-sided heart failure associated with hyperthyroidism. *J Gen Intern Med*; 22:148.
36. Schultz M, Kistorp C, Langdahl B, et al. (2007) N-terminal-pro-B-type natriuretic peptide in acute hyperthyroidism. *Thyroid*; 17:237.
37. Danzi S, Klein I. (2006) Treatment of hypertension and thyroid disease. In Mohler ER, Townsend RR (Eds), BC Decker Inc ; *Advanced Therapy in Hypertension and Vascular Disease*, Ontario, Canada.( p.354)

38. Lozano HF, Sharma CN. (2004) Reversible pulmonary hypertension, tricuspid regurgitation and right-sided heart failure associated with hyperthyroidism: case report and review of the literature. *Cardiol Rev*; 12:299.
39. Mercé J, Ferrás S, Oltra C, et al. (2005) Cardiovascular abnormalities in hyperthyroidism: a prospective Doppler echocardiographic study. *Am J Med*; 118:126.
40. Siu CW, Zhang XH, Yung C, et al. (2007) Hemodynamic changes in hyperthyroidism-related pulmonary hypertension: a prospective echocardiographic study. *J Clin Endocrinol Metab*; 92:1736.
41. Peters A, Ehlers M, Blank B, et al. (2000) Excess triiodothyronine as a risk factor of coronary events. *Arch Intern Med*; 160:1993.
42. Ross DS, Burch HB, Cooper DS, et al. (2016) American Thyroid Association Guidelines for Diagnosis and Management of Hyperthyroidism and Other Causes of Thyrotoxicosis. *Thyroid*; 26:1343.
43. Clozel JP, Danchin N, Genton P, et al. (1984) Effects of propranolol and of verapamil on heart rate and blood pressure in hyperthyroidism. *Clin Pharmacol Ther*; 36:64.
44. Taddei S, Caraccio N, Virdis A, et al. (2003) Impaired endothelium-dependent vasodilatation in subclinical hypothyroidism: beneficial effect of levothyroxine therapy. *J Clin Endocrinol Metab*; 88:3731.
45. Graettinger JS, Muenster JJ, Checchia CS, et al. (1958) A correlation of clinical and hemodynamic studies in patients with hypothyroidism. *J Clin Invest*; 37:502.
46. Crowley WF Jr, Ridgway EC, Bough EW, et al. (1977) Noninvasive evaluation of cardiac function in hypothyroidism. Response to gradual thyroxine replacement. *N Engl J Med*; 296:1.
47. Klein I. (2008) Endocrine disorders and cardiovascular disease. In Libby P, Bonow RO, Mann DL, Zipes DP (Eds), Saunders ,*Braunwald's Heart Disease: A Textbook of Cardiovascular Medicine*, 8th, Philadelphia, Elsevier (p.2033)
48. Dillmann WH. (2002) Cellular action of thyroid hormone on the heart. *Thyroid*; 12:447.
49. Fredlund BO, Olsson SB.(1983) Long QT interval and ventricular tachycardia of “torsade de pointe” type in hypothyroidism. *Acta Med Scand*; 213:231.
50. Fommei E, Iervasi G. (2002) The role of thyroid hormone in blood pressure homeostasis: evidence from short-term hypothyroidism in humans. *J Clin Endocrinol Metab* ; 87:1996.
51. Gumieniak O, Perlstein TS, Hopkins PN, et al. (2004) Thyroid function and blood pressure homeostasis in euthyroid subjects. *J Clin Endocrinol Metab* ; 89:3455.
52. Rothberger GD, Gadhvi S, Michelakis N, et al. (2017) Usefulness of Serum Triiodothyronine (T3) to Predict Outcomes in Patients Hospitalized With Acute Heart Failure. *Am J Cardiol* ; 119:599.
53. Kabadi UM, Kumar SP. (1990) Pericardial effusion in primary hypothyroidism. *Am Heart J* ; 120:1393.
54. Smith TJ, Bahn RS, Gorman CA. (1989) Connective tissue, glycosaminoglycans, and diseases of the thyroid. *Endocr Rev* ; 10:366.
55. Parving HH, Hansen JM, Nielsen SL, et al. (1979) Mechanisms of edema formation in myxedema--increased protein extravasation and relatively slow lymphatic drainage. *N Engl J Med* ; 301:460.