# BÖLÜM 5

# DİSTONİ'DE BOTULİNUM NÖROTOKSİN UYGULAMALARI-1

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## DİSTONİDE BOTULİNUM NÖROTOKSİN UYGULAMALARI

***Distoni***; sürekli veya aralıklı kas kasılmaları sonucu gelişen anormal, sıklıkla repetetif, istemsiz hareket veya duruş veya her ikisinin birlikte görüldüğü nörolojik bir durumdur. Distoni, Parkinson hastalığı ve esansiyel tremordan sonra görülen üçüncü sıklıktaki hareket bozukluğudur (1).

***Distoni tarihçesinde*** ilk yayınlar 1890'lı yıllara denk gelmesine rağmen "Distonia Musculorum Deformans (Familyal Jeneralize Distoni, DYT)" tanımlanması ve "distoni" kelimesinin literatüre kazanılması 1911 yılında Oppenheim tarafınca olmuştur (2). Bu tanımlamadan sonra distoni ile ilgili yayınlanan literatürler sonucunda distoni şemsiyesi altına birçok heterojen hastalık grubu girmiştir. İlk distoni konsensusu 1984 yılında "Distoni Medikal Araştırma Derneği" tarafınca açıklanmıştır. Bu konsensus 2013 yılında Uluslararası Parkinson ve Hareket Bozuklukları Topluluğu ( International Parkinson and Movement Disorder Society) tarafınca revize edilmiştir (3). 1994 yılında ilk olarak Otozomal dominant-Dopa yanıtlı distoninin (DYT5A) GCH1 mutasyonu sonucu geliştiği tanımlandıktan sonra günümüze kadar halen devam eden genetik çalışmalarda otozomal dominant (TOR1A (DYT1), THAP1 (DYT6), GNAL (DYT25), ANO3 (DYT24), CIZ1, ANO3, TUBB4A, SGCE (DYT11), ATP1A3 (DYT12), ADCY5) ve resesif (HPCA, VPS16, COL6A3, PRKRA (DYT16) ) bir çok gen mutasyonları ve X'e bağlı distoni-parkinsonizmde TAF1 mutasyonu (DYT3), erken başlangıçlı jeneralize distonide KMT2B mutasyonu gibi birçok mutasyonlar tanımlanmıştır (2). Distoni tedavisinde;

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## KAYNAKLAR


1. Steeves TD, Day L, Dykeman J et al. The prevalence of primary dystonia: a systematic review and metaanalysis. Movement Disorders 2012;27(14):1789.
2. Balint B, Mencacci NE, Valente EM et al. Dystonia. Nat Rev Dis Primers. 2018 Sep 20;4(1):25.
3. Alberto Albanese 1, Kailash Bhatia, Susan B Bressman et al. Phenomenology and classification of dystonia: a consensus update. Mov Disord. 2013 Jun 15;28(7):863-73.
4. Thomas D Steeves 1, Lundy Day, Jonathan Dykeman et al. The prevalence of primary dystonia: a systematic review and meta-analysis. Mov Disord. 2012 Dec;27(14):1789-96.
5. Ichinose H, Ohye T, Takahashi E et al. Hereditary progressive dystonia with marked diurnal fluctuation caused by mutations in the GTP cyclohydrolase I gene. Nat Genet. 1994 Nov;8(3):236-42.
6. Williams L, McGovern E, Kimmich O et al. Epidemiological, clinical and genetic aspects of adult onset isolated focal dystonia in Ireland. Eur J Neurol. 2017 Jan;24(1):73-81.
7. Erbguth FJ, Naumann M. Historical aspects of botulinum toxin: Justinus Kerner (1786-1862) and the "sausage poison." Neurology . 1999 Nov 1;53(8):1850–1850.
8. Epidemiological Study of Dystonia in Europe (ESDE) Collaborative Group. A prevalence study of primary dystonia in eight European countries. J Neurol. 2000 Oct;247(10):787-92.
9. Kutvonen O, Dastidar P, Nurmikko T. Pain in spasmodic torticollis. Pain. 1997; 69(3): 279–286.
10. Tyślerowicz M, Kiedrzyńska W, Adamkiewicz B. Et al. Cervical dystonia - improving the effectiveness of botulinum toxin therapy. Neurol Neurochir Pol. 2020;54(3):232-242.
11. Mainka T, Erro R, Rothwell J, et al. Remission in dystonia - Systematic review of the literature and meta-analysis. Parkinsonism Relat Disord. 2019; 66: 9–15.
12. Tatu L, Jost W. Anatomy and cervical dystonia: "dysfunction follows form". J Neural Transm 2017 Feb;124:237–243)
13. Greene P, Kang U, Fahn S, et al. Double-blind, placebo-controlled trial of botulinum toxin injections for the treatment of spasmodic torticollis. Neurology. 1990; 40(8): 1213–1218.
14. Simpson DM, Hallett M, Ashman EJ, et al. Practice guideline update summary: Botulinum neurotoxin for the treatment of blepharospasm, cervical dystonia, adult spasticity, and headache: Report of the Guideline Development Subcommittee of the American Academy of Neurology. Neurology. 2016; 86(19): 1818–1826.
15. Rodrigues FB, Gonçalo SD, Raquel EM et al. Botulinum toxin type A therapy for cervical dystonia. Cochrane Database Syst Rev. 2020 Nov 12;11(11):CD003633.
16. Comella CL, Buchman AS, Tanner CM et al. Botulinum toxin injection for spasmodic torticollis: increased magnitude of benefit with electromyographic assistance. Neurology 1992; 42:878-82.
17. Huang L, Chen H.-X, Ding X.-D et al. Efficacy Analysis of Ultrasound-Guided Local Injection of Botulinum Toxin Type A Treatment with Orthopedic Joint Brace in Patients with Cervical Dystonia. Eur. Rev. Med. Pharmacol. Sci. 2015, 19, 1989–1993.
18. Bhidayasiri R, Cardoso F, Truong DD. Botulinum toxin in blepharospasm and oromandibular dystonia: comparing different botulinum toxin preparations. Eur J Neurol. 2006 Feb;13 Suppl 1:21-9.
19. Yoshida K. Prevalence and incidence of oromandibular dystonia: an oral and maxillofacial surgery service–based study. Clin Oral Investig. 2021 Oct;25(10):5755-5764.
20. van Harten PN, Hoek HW, Matroos GE et al. The inter-relationships of tardive dyskinesia, parkinsonism, akathisia and tardive dystonia: the Curacao extrapyramidal syndromes study II. Schizophr Res 1997:235–42.
21. Tan EK, Jankovic J. Tardive and idiopathic oromandibular dystonia: a clinical comparison. J Neurol Neurosurg Psychiatry. 2000 Feb;68(2):186-90.
22. Sude A, Nixdorf DR. Prevalence and Clinical Characteristics of Oromandibular Dystonia Patients in Orofacial Pain Clinic: A Retrospective Study. Oral Surg Oral Med Oral Pathol Oral Radiol. 2020 Aug;130(2):169-174.

23. Ameer MA, Bhatti D. Chemodenervation for Oromandibular Dystonia Utilizing Botulinum Toxins, Cureus. 2021 Oct 1;13(10):e18425.
24. Tan EK, Jankovic J. Botulinum toxin A in patients with oromandibular dystonia: long-term follow-up. Neurology 1999; 53: 2102–2107.
25. Jankovic J, Orman J. Botulinum A toxin for cranialcervical dystonia: a double-blind, placebo-controlled study. Neurology 1987; 37: 616–623.
26. Halletta M, Albanese A, Dressler D et al. Evidence-based review and assessment of botulinum neurotoxin for the treatment of movement disorders. Toxicon, Volume 67, 1 June 2013, Pages 94-114.
27. Quezada-Gaon N, Wortsman X, Peñaloza O et al. Comparison of clinical marking and ultrasound-guided injection of Botulinum type A toxin into the masseter muscles for treating bruxism and its cosmetic effects. Dermatol. 2016 Sep;15(3):238-44.
28. Yoshida K. Botulinum Neurotoxin Therapy for Lingual Dystonia Using an Individualized Injection Method Based on Clinical Features. Toxins (Basel). 2019 Jan 17;11(1):51.
29. Slaim L, Cohen M, Klap P.et al. Oromandibular dystonia: Demographics and clinical data from 240 patients. J. Mov. Disord. 2018, 11, 78–81.
30. Sheehy M.P, Marsden C.D. Writers' cramp—A focal dystonia. Brain 1982, 105, 461–480.
31. Nutt J.G, Muenter M.D, Melton L.J et al. Epidemiology of dystonia in Rochester, Minnesota. Adv. Neurol.1988, 50, 361–365.
32. Zakin E, Simpson DM. Botulinum Toxin Therapy in Writer's Cramp and Musician's Dystonia. Toxins (Basel). 2021 Dec 14;13(12):899.
33. Marsden C.D, Sheehy M.P. Writer's cramp. Trends Neurosci. 1990, 13, 148–153.
34. Altenmuller E, Jabusch H.C. Focal dystonia in musicians: Phenomenology, pathophysiology, triggering factors, and treatment. Med. Probl. Perform. Art. 2010, 25, 3–9.
35. Tsui JK, Bhatt M, Calne S.et al. Botulinum toxin in the treatment of writer's cramp: A double-blind study. Neurology.1993, 43, 183–185.
36. Kruisdijk JJM, Koelman J.H.T.M, De Visser B.O.et al. Botulinum toxin for writer's cramp: A randomised, placebo-controlled trial and 1-year follow-up. J. Neurol. Neurosurg. Psychiatry 2007, 78, 264–270.
37. Schuele S, Jabusch HC, Lederman RJ et al. Botulinum toxin injections in the treatment of musician's dystonia, Neurology. 2005 Jan 25;64(2):341-3.
38. Dressler D, Altavista MC, Altenmueller E.et al. Consensus guidelines for botulinum toxin therapy: general algorithms and dosing tables for dystonia and spasticity. J Neural Transm (Vienna) 2021 Mar;128(3):321-335.