BÖLÜM 5

NİKOTİN YOKSUNLUĞUNUN ÖĞRENME VE HAFIZA ÜZERİNE ETKİLERİ

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GİRİŞ

Öğrenme, bireyin çevresiyle etkileşimi sonucu bilgi ve davranışlarında meydana gelen kalıcı değişiklikleri ifade ederken; hafıza, bu bilgilerin kodlanması, depolanması ve gerektiğinde hatırlanmasını sağlayan bilişsel bir süreçtir. Her iki işlev de sinaptik plastisite ve nöral ağlardaki değişimlerle gerçekleşmektedir. Özellikle hipokampus, prefrontal korteks gibi beyin yapıları bu süreçlerde merkezi rol oynar. Glutamat, asetilkolin ve dopamin gibi nörotransmitterler ise öğrenme ve hafızanın nörokimyasal temelini oluşturmaktadır. Öğrenme ve hafıza, bireyin çevresine uyum sağlaması, karar alma ve davranışlarını düzenlemesi açısından kritik öneme sahiptir (1). Nikotin; tarihsel, farmakolojik, biyolojik ve davranışsal boyutları olan karmaşık ve çok yönlü bir maddedir. Tütün bitkisinden elde edilen ve tarihsel olarak 16. yüzyılda Avrupa'ya tanıtılan nikotin, adını Fransız elçisi Jean Nicot'tan almış ve günümüzde dünyada en yaygın kullanılan psikoaktif maddelerden biri haline gelmiştir. Nikotin, merkezi sinir sistemine (MSS) etki eden güçlü bir alkaloiddir ve tütün ürünlerinin bağımlılık yapıcı temel bileşenidir. Beyindeki nikotinik asetilkolin reseptörlerine (nAChR) bağlanarak çeşitli nörotransmitter sistemlerini etkilemektedir. Bu etkileşim, öğrenme ve hafıza gibi yüksek düzey bilişsel işlevler üzerinde hem olumlu hem de olumsuz etkiler doğurabilir (2).

Nikotinin etkisi, ilgili dokuları oluşturan farklı hücre tiplerinde bulunan nikotinik asetilkolin reseptörlerinin (nAChR) ekspresyonuna bağlıdır. Uzun süreli

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hipokampus temelli bellek süreçlerinde kayıplara yol açtığını net biçimde ortaya koymaktadır (47–49). Bu bulgular, yalnızca nikotin bağımlılığının nörobiyolojik temellerini değil, aynı zamanda yoksunluğa bağlı bilişsel defisitlerin mekanizmalarını da aydınlatmaktadır.

Sonuç olarak nikotin bağımlılığı, dopaminerjik ödül devreleriyle sınırlı kalmayıp, öğrenme ve hafıza ile ilişkili geniş bir nörotransmitter ağı, gen ekspresyonu ve sinaptik plastisite mekanizmalarını da kapsamlı biçimde etkilemektedir. Bu nedenle hem hayvan hem de klinik düzeyde yürütülecek davranışsal, nörokimyasal ve moleküler çalışmalar, nikotin yoksunluğuna bağlı bilişsel bozuklukların önlenmesi ve tedavisinde yeni farmakolojik yaklaşımların geliştirilmesi gerektiğini vurgulamaktadır.

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