

KÖK HÜCRE BİYOLOJİSİ VE KANSER TEDAVİSİNDEKİ KULLANIM ALANLARI

33.

BÖLÜM

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1-GİRİŞ

İlk olarak 1858'de Rudolph Virchow'un "tüm hücrelerin başka hücreden oluştuğu" hipoteziyle temelleri atılan kök hücreler, popüler kültürde tüm hasar gören dokuları iyileştirebilen, yaşlanmayı tarihe karıştırabilecek mucize hücreler olarak görülmektedir. Günümüz itibariyle bu inanışlar gerçekten uzak olsa da, bilimsel temellerinin daha iyi anlaşılmasıyla, kök hücreler kronik hastalıklardan kansere kadar bir çok hastalığın tedavisinde cazip bir alternatif olacaktır. Bu bölümde kök hücrelerin özelliklerinden kısaca bahsedilecek, kanser tedavisindeki fonksiyonları irdelenecektir.

2-KÖK HÜCRENİN TANIMI VE ÖZELLİKLERİ

Kök hücreler, farklı hücre türlerine farklılaşabilen ve aynı kök hücreden daha fazlasını üretmek için defalarca çoğalabilen farklılaşmamış veya kısmen farklılaşmış hücrelerdir. Hem embriyoda hem de erişkin organizmalarda bulunurlar. İleri bölünme yeteneği ile progenitör hücrelerden, bir çok hücre tipine farklılaşma yeteneğiyle de blast hücrelerinden ayrılırlar. Kök hücrelere özgü 3 ana özellik bölünme kapasitesi, klonalite ve potensdir.

- Kendini Yenileme(Self-renewal)

Kendini yenileme, kök hücrelerin daha fazla kök hücre oluşturmak üzere bölündüğü süreçtir. Böylelikle yaşam boyu kök hücre havuzunun devamlılığı sağlanır. Kök hücreler, diğer tüm hü-

relere göre artmış bölünme yeteneğine sahiptir. Literatürde kök hücrenin bölünme kapasitesi hakkında 'ölümsüz' 'sınırsız' 'sürekli' gibi bazı yanlış sıfatlar kullanılmaktadır. Çoğu somatik in vitro hücre kültüründe, bölünme yeteneğinin kaybolmasına kadar maksimum 80 kez bölünebildiği görülmüştür.¹⁻⁴ Nadir birkaç vaka özelinde, Embriyonal kök hücre ve nöral kök hücrelerde bu sayının (onkojenik transformasyon olmaksızın) 160'a çıktığı görülebilmektedir.⁵

-Klonalite

Kök hücrenin ikinci özgün özelliği, tek bir kök hücrenin hücrenin daha fazla hücre üretebilmesi anlamına gelen klonalitedir.⁶ Özellikle hematolojik malignitelerin tedavisinde yoğun kemoterapi sonrası hasarlanan kemik iliğinin tekrar üretime geçmesinde hematolojik kök hücrelerinin bu özelliğinden yararlanılmaktadır.

-Potens (Plastisite)

Potens, bir kök hücrenin farklı hücre tiplerine farklılaşabilme yeteneğidir. Farklılaşılacak hücre tipi sayısına göre gruplandırılırlar(Tablo-1).

3-KÖK HÜCRE TİPLERİ

Kök hücreler genel olarak ikiye ayrılır: Embriyonik kök hücreler(EKH) ve Somatik(erişkin) kök hücreler(SKH)

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dirmenin önemi büyüktür. Ek çalışmalarla bu konudaki tecrübe arttığında, kök hücreler kanser tedavisinde yeni kapılar açacaktır.

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