6. BÖLÜM

OFTALMOLOJİDE KÖK HÜCRE UYGULAMALARI

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KÖK HÜCRE TANIMI

Kök hücreler, sınırsız olarak kendilerini yenileme kapasitesine ve farklı hücre tiplerine dönüşebilme yeteneklerine sahip hücrelerdir. Progenitör hücre kendi kendini yenileme kapasitesine sahip çok potansiyelli hücre demektir. Kök hücre terimi, progenitör ve öncü hücre tipleri ifadelerini kapsamaktadır. Çoğalma yeteneği yüksek olan kök hücrelerden sınırsız sayıda matür hücre gelişebilir. Elverişli bir ortamda uygulama alanında çoğalırlar böylece diğer hücrelere farklılaşıp türünün devamlılığını sağlarlar. Kendi kendilerini yeniler ve hücre topluluklarının devamlılığını sağlamış olurlar. Ayrıca kök hücreler, vücutta zedelenen dokuyu onarıp, o dokuyu işlevsel hale getirebilirler. Bu potansiyelleriyle kök hücreler, gözde, dejeneratif retina hastalıkları, limbal kök hücre yetmezlikleri, glokomatöz ganglion hücre hasarlarında tedavidebir seçenek olarak karşımıza çıkmaktadır (1).

Kök hücre tedavi uygulanmalarında göz diğer organlara göre daha avantajlıdır. Gereken kök hücre ihtiyacı miktar olarak azdır, dolayısıyla maliyet düşüktür. Cerrahi yaklaşımda da kolaylık söz konusudur. Klinikteki görüntüleme yöntemleriyle nakledilen hücreler daha kolay izlenir. Diğer göz kontrol olarak kullanılır. Gözün kendine özgü immün ayrıcalığından ötürü uzun süreli immünsupresif tedavi ihtiyacı olmaz (2).

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rü 1 (IGF1) ve FGF2 gibi nörotrofik faktörlerin salgılanmasına sekonderdir ve hasarlı retinaya koruma sağladığı bilinmektedir (105). MKH'lerin intravitreal transplantasyonu sonrası kemirgenlerde ganglion hücre kaybında azalma gözlenmiştir (106).

Kemik iliğinden türetilen MKH'ler nörodejeneratif hastalıkların patofizyolojisinde yer alan inflamatuar yanıtı modüle etme kabiliyetine sahiptir. Glokomdaki ganglion hücre kaybı için bu hücrelerin kullanımı üzerine daha fazla çalışma yapılmalıdır.

Bir glokom modelinde, oligodentrosit öncü hücrelerin in vitro olarak nöroprotektif özellikler sergilediği görülmüştür (107). İlginç bir şekilde, bu hücreler sadece zimozan kullanılarak pro-inflamatuar hücrelerin eş zamanlı aktivasyonunu takiben nöroprotektif bir etki göstermişlerdir (108). Bu hücrelerin glokomatöz gözlere nakledilmesinin bir riski, aşırı miyelinleşmeye bağlı ışık ileti blokajıdır.

Olfaktör kaplama hücrelerinin, omurilik yaralanması modellerinde aksonal rejenerasyonu artırdığı saptanmıştır. Bu hücrelerin optik sinir bozukluklarında, glokomda kullanımı için ileri çalışmalar şarttır. Omurilik transeksiyonu modellerinden elde edilen kanıtlar, olfaktör kaplama hücreleri transplantasyonunun, nöroprotektif etki ile ilişkili gibi görünen BDNF gibi nörotrofinlerin artan salgılanmasıyla ilişkili olduğunu göstermektedir (109).

Retinada hasarlı nöronlar ile ilgili olarak, endojen reaktivasyonun anahtarını elinde tutan da Müller glia olabilir.

SONUÇ

Hızla gelişen kök hücre araştırmaları, ilerlemiş glokomu olan hastalar için umut vadetmektedir. Optik sinirin rejenerasyonu çok fazla gerçekçi gibi görünmese de, lokal retina ganglion replasmanı ve nakledilen kök hücrelerin kullanıldığı nöroprotektif mekanizmalar ile ilgili çalışmalar, bu tür tedaviyi yakın gelecekte uygulayabileceğimizi düşündürmektedir.

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