HİPOTALAMO-HİPOFİZER HORMON FİZYOLOJİSİ VE HAYVAN MODELLERİ

2

BÖLÜM

Özgür ARAT

GİRİŞ

Hipofiz fonksiyonel olarak homeostaz ve büyüme, metabolizma, üreme, cinsel gelişim, gebelik hali, emzirme ve stres tepkilerinin düzenlenmesinde görev alan endokrin bir dokudur. Hipofiz bezi, periferik hedef dokular için uyarıcı faktörler olarak işlev gören büyüme hormonu, prolaktin, tiroid uyarıcı hormon, luteinize edici hormon, folikül uyarıcı hormon, vazopressin (antidiüretik hormon) ve oksitosin üretir. Hipofizin fonksiyonel kısımları, hipotalamus (hipotalamo-hipofizer aks) ve hormonal hedef dokulardan feedback mekanizmaları ile fonksiyonel olarak düzenlenir. Fare deneyleri ile yapılan çalışmalar, insan hipofiz bezinin fonksiyon bozukluğunun önemli bir şekilde anlaşılmasını sağlamış olup hipofiz yanıtlarının homeostazın korunmasındaki değişkenliği hakkında değerli bilgiler sağlamıştır.

EMBRİYOLOJİ

Fare hipofiz bezi , ön ve arka lobdan oluşur. İki lobun farklı embriyolojik kökenleri vardır. Ön hipofiz (adenohipofiz) Rathke kesesinden (bir orofaringeal divertikül) kaynaklanırken, arka hipofiz (nörohipofiz) 3. ventrikül tabanındaki nöroektodermden (diensefalon) oluşur [1; 2; 3]. Farede postkoital yaklaşık 8,5 ila 9. günde temel bir Rathke kesesi oluşumu izlenir [4; 5].Kortikotrop, tirotrop, somatotrop, laktotrop ve son olarak gonadotrop hücreler, postkoital 12,5 ila 16,5. gün arasındaki spesifik gen ekspresyonu ile ilişkili olarak gelişir [4].Yaklaşık postkoital 14. günden başlayarak, iç karotid arter hipotalamik bölgeye dallar sağlar ve sonuçta ön hipofiz için ana kan kaynağı sağlamak üzere hipofizer portal sistemi oluşturur [3]. Hipofiz ve hipofiz sapı, üst hipofiz arterlerinden kan alır. Tiroid uyarıcı hormon (TSH), folikül uyarıcı hormon (FSH), leutinize edici hormon (LH) ve büyüme hormonu(GH) üreten granüler hücrelerin ultrastrüktürel gösterimi, SMA farelerinde GH üreten hücrelerde oransal bir artış ile 16. gebelik gününde mevcuttur [6]. Hipofiz organogenezi sürecinde, çoklu büyüme ve transkripsiyon faktörlerinin etkisi altında progenitör hücrelerin aktif göçü, hücre modellemesi ve hücre farklılaşması vardır [7; 8; 9; 10].Doğumdan sonra, hormon üreten hücrelerin çoğalması ve farklılaşması ve ayrıca progenitör hücrelerin oluşturulması devam eder [11; 12; 13].

ANATOMİ

Fare hipofizi, sella turcica'da bulunur, sella turcica bazifenoid kafatası kemiğinin dorsal yüzeyinde yer alır. Hipofiz bezinin büyük kısmını adenohipofiz oluşturur. Adenohipofiz pars tubeyollarda daha büyük bir bozulma olabileceğini, ancak kanıt bulunmadığını varsaymışlardır. Birlikte ele alındığında, HPA üzerindeki travmatik patlama etkisinin, klinik ve terapötik olarak önemli olabilecek cinsel olarak iki şekilli olduğu görülmektedir.

Sonuç

Hipotalamo-hipofizer aksın endokrin bozukluğuna neden olan etkilerin temelleri tam olarak bilinmemektedir. Travmatik beyin hasarı ve bunun sonucunda oluşan hipotalamo-hipofizer aks bozuklukları ciddi sonuçlara yol açmaktadır. Bu nedenle travmatik beyin hasarı nedeniyle oluşan hipofiz hormon değişimlerinin nedenini tespit etmek için çok sayıda çalışmaya ihtiyaç vardır. Ayrıca bazı hastalarda gözlenen spontan düzelme göz önüne alındığında, buna neden olan onarıcı mekanizmaların ve hipofizer kök hücrelerin travmatik beyin hasarına cevabı sonrası oluşan doku rejenerasyonunun ortaya çıkması araştırılmaya değerdir. Panhipopitüitarizm için yeni tedavi seçenekleri sunabileceği düşünüldüğünde, rejeneratif süreçlerin anlaşılabilmesi hala önemini korumaktadır.

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