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BÖLÜM

KALP YETMEZLİĞİ HAYVAN MODELLERİ

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Günümüz kardiyovasküler araştırma konularından en popüler olanlarından bir tanesi de kalp yetmezliğidir. Halen kalp yetmezliği en önemli mortalite nedenlerinden birisidir. Nitekim sadece Amerika Birleşik Devletlerinde (ABD) her 37 saniyede bir kişi kardiyak nedenli hayatını kaybetmektedir (1). Kayıtların düzenli olarak tutulması sonucu genel olarak epidemiyolojik veri kaynağını oluşturan ABD' inde yaklaşık 5 milyon konjestif kalp yetmezliği hastası mevcuttur (2). Bu rakama her yıl yaklaşık 550.000 yeni kalp yetmezliği vakası eklendiğini de yine aynı ülkenin kaynaklarından öğrenmekteyiz (3). Kalp yetmezliğinin bu kadar yaygın oluşu geliştirilecek ilaç ve cihaz gibi tedavi amaçları için hayvan modellerine ihtiyacı artırırken diğer yandan hastalığın patofizyolojisini anlamak için de ayrı bir ihtiyaç söz konusudur. Kalp yetmezliği modellemelerinde öncelikli olarak insan temelinde hangi kalp yetmezliği ile ilgili çalışma planlanıyorsa ona uygun modeli oluşturmakla başlar. Sağ kalp yetmezliği, sol kalp yetmezliği, konjestif kalp yetmezliği, hipertansif kalp yetmezliği ve iskemik kalp yetmezliği gibi ana hipoteze uygun modellerden birisi seçilmelidir. Ancak hayvan modelleri harika bir şekilde bile seçilse araştırma yapılacak deney hayvanları laboratuvarının hangi hayvanlarla çalışılması için ruhsatı olduğu önemli bir sorunu teşkil etmektedir. Genel olarak modeller üzerinde cerrahi mi planlanacak yoksa ilaç veya patofizyoloji mi bakılacak sorusu net ise seçilecek hayvan modeli bir nebze netleşmiş demektir. Nitekim fare modelinde kalp-akciğer makinesi modellenmiş bir çalışma imkânsız iken domuz veya diğer büyük hayvanlarda bu model rahatlıkla uygulanabilmektedir. Deney hayvanı çalışmalarının ana prensibi olan 3R kuralına göre basit canlıdan ve en az sayıda kullanılması

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takibi ve ölçüm parametreleri açısından kolaylıklar sağlamaktadır. Raake ve arkadaşları domuz kalbine direkt olarak Cx'e intrakoroner olarak balon uygulayarak akımı 2 saat boyunca durdurarak kalp yetmezliđi modeli geliřtirmişlerdir (130). Pleger ve arkadaşları da aynı yöntemi uygulayarak kalp yetmezliđi modeli oluşturmuşlardır (131). Toksik modellemelerden olan doksorubisin modelleri de domuz üzerinde yapılabilmektedir (133).

Diđerleri

Kalp yetmezliđi üzerine buzađı, hindi, babun, midilli atı, dađ gelinciđi ve kediler üzerinde yapılmıř birçok çalıřma mevcuttur (88-97). Ancak bu modellemeler için uygun alt yapıya sahip deney hayvanları laboratuvarına ihtiyaç olduđu akıldta tutulmalıdır. Burada sayılan hayvan türlerinin seçimi çalıřmacılara ait olmakla birlikte genel olarak kalp yetmezliđi çalıřmalarında tercih edilen canlılar deđildirler (87).

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