12.
BÖLÜM

KARDİYORENAL SENDROM

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GİRİŞ

Kardiyovasküler ve böbrek hastalığının etkileşimi birçok mekanizmanın dahil olduğu bir süreçtir. Renal kan akımı, toplam kardiyak çıktının yaklaşık %20-%25'ini oluşturur. Renal kan akımı ve diğer düzenleyici faktörler glomerüler filtrasyonu düzenler [1].

Kalp yetersizliğinde (KY) görülen kalp ve böbreğin hemodinamik etkileşimleri böbrek fonksiyonlarını önemli ölçüde etkiler. Aterosklerozun her iki organ sistemi üzerindeki etkisi, nörohormonal aktivasyon, sitokinler, kronik böbrek hastalığında (KBH) anemi-enflamasyon-kemik mineral ekseninde görülen biyokimyasal düzensizlikler ve böbrek hastalığının ilerlemesine bağlı kalpte meydana gelen yapısal değişiklikler böbrek ve kardiyovasküler sistem arasındaki fizyopatolojik etkileşimin başlıca sebepleri arasındadır. Kardiyorenal sendrom (KRS) terimi ise hem kalbi hem de böbrekleri içeren ve bu organların herhangi birinde oluşan akut veya kronik fonksiyon bozukluğunun diğer organda akut veya kronik fonksiyon bozukluğuna neden olabileceğini gösteren bir hastalık yelpazesini tanımlamaktadır.

Kronik böbrek hastalığı ve KY başta olmak üzere, kalp hastalıklarının prognoz ve ekonomi üzerine olan etkileri iyi bilinmektedir. Amerika Birleşik Devletleri'nde (ABD) yapılan bir çalışmada KY nedeniyle yılda yaklaşık 1 milyon hastane yatışı olduğu ve bu nedenle yılda yaklaşık 37.2 milyar dolar sağlık harcaması yapıldığı bildirilmiştir [2]. Uluslararası ölçekte yapılan bir başka araştırmaya göre ise 2015 yılında KBH'nin küresel prevalansının yaklaşık %13.4 olduğu tahmin edilmektedir [3]. Bununla birlikte, KY başta olmak üzere, kardiyovasküler hastalıkların (KVH), KBH popülasyonunda bir numaralı ölüm nedeni olduğu görülmektedir [4]. Bu veriler ışığında, bu iki sistemin birbirleri olan ilişkilerinin incelemesi ve yönetimi son derece önem kazanmaktadır.

TANIM

Kardiyorenal sendrom terimi ilk kez, 2004 yılında gerçekleştirilen, kalp ve böbrek arasındaki etkileşimin incelendiği Ulusal Kalp, Akciğer ve Kan Enstitüsü (*National Heart, Lung, and Blood Institute*) bünyesinde oluşturulan kalp ve böbrek arasındaki etkileşimi inceleyen bir çalışma grubu tarafından kullanılmıştır [5]. Bu toplantıda

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maktadır. Bu durumda esas olarak kalbin kasılma fonksiyonu etkilenir ve kas protein ekspresyonu (aktin ve miyozin) anormaldir.

Tanı

Bu hastalarda septik süreç sırasında yükselmesi tipik olan bazı karakteristik biyobelirteçlerde artış görülebilir: lipopolisakkarit bağlayıcı protein, prokalsitonin, CRP, proinflamatuar sitokinler (IL-6, TGF-β). Tip-5 KRS'de kardiyak fonksiyonun değerlendirilmesi, miyokardiyal disfonksiyonun mevcut olduğu diğer klinik durumlara oldukça benzerdir. Natriüretik peptidler ve troponin düzeyleri, kalp boşlukları (özellikle sol kalp boşlukları) ve miyokardiyal hücre hasarı hakkında bilgi verebilir. Septik sürecin erken aşamalarında, düşük debili bir kardiyak tutulum vardır; sıvı tedavisine başladıktan sonra, klinik tablo artmış kalp debisi ve sistemik vazodilatasyon ile karakterize tipik şok tablosuna dönüşür [85]. Ekokardiyografide, yüksek kardiyak atıma eşlik eden sol ventrikülde bölgesel kontraktilite anormallikleri ve sol kalp boşluklarında genişleme görülebilir. Sepsisle ilişkili tip-5 KRS'de böbrek tutulumu tanısı, KDIGO kriterlerine göre konulmalıdır.

Yönetim

Öncelikle hemodinamik stabilitenin ve doku perfüzyonunun sağlanması, sıvı kontrolü ve doğru antibiyotik tedavisi sepsisin hiperakut fazında tip-5 KRS›yi önlemek için kilit noktalardır. Sıvı tedavisi, aşırı sıvı yüklenmesi ve diğer iyatrojenik komplikasyonları önlemek için dikkatli bir şekilde yönetilmelidir.

Enflamasyon ve immün bozukluklar sepsis patogenezinde önemli rol oynadığından sitokinlerin uzaklaştırılması ve immünomodülasyon yüksek geçirgenliğe sahip membranlar ile sağlanabilmektedir [99]. Kardiyak komplikasyonları yönetmek için, dolum basınçlarını korumak için sıvı tedavisi ile birlikte vazopressörler, vazodilatörler ve inotropları içeren kombine bir yaklaşım gereklidir. Kalp debisi üzerindeki depresif etkileri nedeniyle vazopressörler dikkatle uygulanmalıdır. Böbreğe yönelik destek tedavisi, herhangi bir nefrotoksik ilacın ve ortamın uzaklaştırılmasını, yeterli perfüzyon basıncının sürdürülmesini ve endike ise, diyaliz tedavisi ile erken müdahaleyi içerir. Renal hemodinamiğin iyileştirilmesinde dopaminin rolü yoktur ve fenoldopam ile yapılan çalışmalar sınırlıdır [100,101]. Norepinefrin normal koşullarda renal perfüzyonu azaltır ancak septik hastalarda sistemik kan basıncını yükseltir. Vazopressinin ise diürez ve GFH'yi arttırtığı bilinmektedir [100].

Diüretiklerin septik hastalarda kalp ve böbrek tutulumunu yönetmede sınırlı bir rolü vardır [102]. Septik hastalarda başka kesin endikasyonlar (üremi, hiperkalemi, ciddi metabolik asidoz, hipervolemi gibi) yoksa sadece kreatinin artışı veya oligüri nedeniyle RRT uygulanmamalıdır. RRT ihtiyacı olan hastalarda ise uygulanacak diyaliz modalitesinin (aralıklı hemodiyaliz veya SRRT) seçiminde hastanın klinik durumu, hemodinamisi ve performansını dikkate almakta fayda vardır [103]. Erken ultrafiltrasyon, septik şok hastalarında renal sonuçları iyileştiriyor gibi görülse de, bu verilerin daha ileri klinik çalışmalarda doğrulanması gerekmektedir.

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