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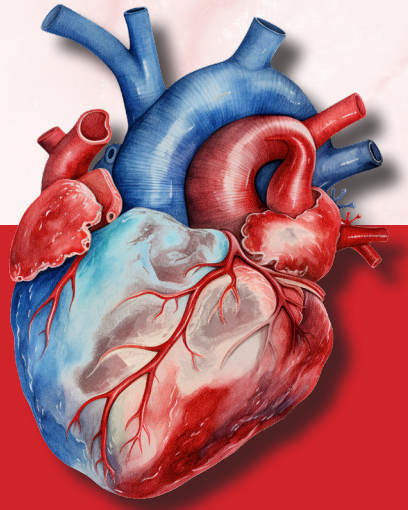

KALP ve Ddamar CERRAHİSİ

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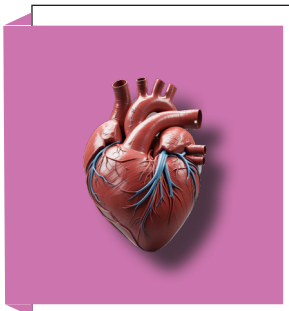

MİYOKARD İNFARKTÜSÜNÜN MEKANİK KOMPLİKASYONLARINDA CERRAHİ TEDAVİ YAKLAŞIMLARI

BÖLÜM 50

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cıyla uygulanır. Cerrahi kararı, hastanın klinik durumu, anevrizmanın özellikleri ve eşlik eden komorbiditeler göz önünde bulundurularak multidisipliner bir yaklaşımla alınmalıdır.

SERBEST DUVAR RÜPTÜRÜ CERRAHİ TEDAVİSİ

Miyokard infarktüsü sonrası kalbin sol ventrikül serbest duvarında meydana gelen yırtılmanın sonuçları çok gürültülü ve genellikle mortalite ile seyreder. Genellikle akut miyokard infarktüsünden sonraki ilk 1-2 haftada görülür. İnfarktüs geçiren hastaların %1-3'ünde görülebilir. İlk geçirilen miyokard infarktüsü ve geniş transmural infarktüste risk daha fazladır(1,17).

Serbest duvar rüptürü, ani hemodinamik bozulma ve kardiyojenik şok ile karakterize bir durumdur. Ani hipotansiyon, bilinç kaybı, senkop, perikardiyal tamponad bulguları(Juguler venöz dolgunluk, pulsus paradoksus vb.)

Serbest duvar rüptürü acil cerrahi müdahale gerektiren bir durumdur. Hastalar acil olarak hemodinamik olarak stabilize edilmelidir. Perikardiyosentez, inotropik ajanlar, İABP gerektiğinde hızlıca kullanılmalıdır. Hastaya tanı konar konmaz şekilde çekilerek kardiyopulmoner bypass a girilmelidir.

Rüptür olan bölgeye yama uygulanır. Genellikle sentetik veya biyolojik yamalar kullanılır. Fibrin yapıştırıcılar veya destekleyici greftler kullanılabilir. Cerrahi müdahale yapılmazsa mortalite %100'e yakındır. Cerrahi ile mortalite %20-50 arasındadır(1,18).

Postoperatif komplikasyonları kalp yetmezliği, aritmiler, enfeksiyon, doku bütünlüğü iyi olmadığı için tekrar rüptür olarak gözlenir.

Sonuç olarak; miyokard infarktüsünün mekanik komplikasyonları, acil cerrahi müdahale gerektiren ciddi klinik durumlardır. Güncel cerrahi teknikler ve multidisipliner yaklaşımlar, bu hastaların yaşam kalitesini artırmakta ve mortaliteyi azaltmaktadır.

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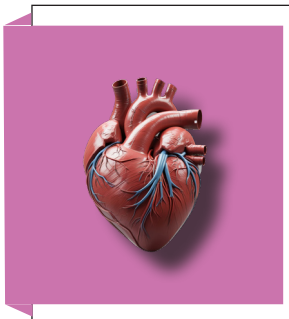

MİYOKARD İNFARKTÜSÜ SONRASI GELİŞEN VENTRİKÜLER SEPTAL DEFEKT

BÖLÜM
51

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kaçan ya da kapatıldıktan sonra tekrar açılan defektler de olabilir. Bu defektler eğer kalp yetmezliği bulgularına neden oluyorlarsa ya da sol-sağ şant oranı (Qp/Qs) 2'den büyükse tekrar ameliyat edilmelidirler. Bu şekilde kronikleşmiş septal defektler için transatriyal yaklaşım uygun olabilir. Eğer rezidüel defekt küçük (Qp/Qs <2) ise ve hastanın yakınması yoksa medikal tedavi ile takip reoperasyondan daha uygun bir seçenek olabilir.

Post MI VSD'ler günümüzde nadir görülse de, hayati riski çok yüksek patolojilerdir. Cerrahi zamanlama ve uygun bir teknikle tamir, tecrübeli merkezlerde, tecrübeli cerrahlar tarafından yapılırsa mortalite ve morbidite daha az olabilir. En iyi şartlarda bile operatif mortalite %30'lar civarındadır. Genç cerrahların bu prosedürleri daha tecrübeli cerrahlardan öğrendikten sonra üstlenmeleri daha doğru bir yaklaşım olacaktır.

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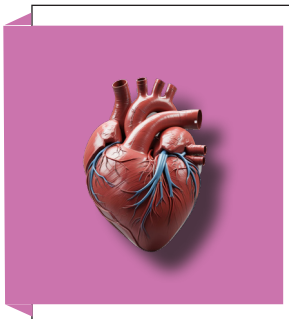

SOL VENTRİKÜL ANEVRİZMASI

BÖLÜM
52

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Endoanevrizmorafinin önemli bir avantajı da geç dönemde prognoza etki eden önemli bir faktör olarak kabul edilen LAD revaskülarizasyonuna olanak sağlamasıdır.[25] Endoventrikler yama plastisi tekniğinde perikardiyal yama, iç yüzeyi perikard, dış yüzeyi dacron ile kaplanmış bir yama kullanımı ve geometrik endoventriküler tamir gibi birçok yeni modifikasyon da bildirilmiştir.[26,27]

Bunun yanında lineer onarım yapılan olgularda düşük mortalite ve %78.13 oranında NYHA klasında iyileşme sağlayan serilerde bildirilmiştir.[8] Modifiye bir lineer onarim tekniğinin kros-klempsiz uygulandığı olgularda %2.6 mortalite ile 5 yıllık %84 yaşam oranı ve NYHA klası ile EF'de olumlu artışlar gözlenmiştir.[28] Bu çalışmada anlamlı risk faktörleri, tamir öncesi mitral yetmezliği ve KKY bulgularının varlığı ve aritmiler olarak gösterilmiştir.

Özetlenecek olursa, sonuçları etkileyen faktörler içerisinde, iskemiden zarar gören miyokard dokusunun miktarı, kapak lezyonunun bulunup bulunmaması, ventrikül kavitesinin genişliği, VT ataklar ve koroner arter hastalığının yaygınlığı erken ve geç sonuçlar üzerinde önemli rol oynamaktadırlar. Literatüre bakıldığı zaman çok değişik mortalite ve morbidite oranları ile karşılaşılmaktadır. Endoventriküler sirküler yama tekniğinin uygulanmasından sonra bu oranlarda önemli ölçüde düşme olmuştur. Bu gün iyi merkezlerde mortalite %3-5, IABP kullanımı %18 civarındadır.

Geç sonuçlara bakıldığı zaman 5 yıllık yaşam süresi yaklaşık %84'dür. Geç sonuçlara etki eden diğer önemli bir faktör LAD'nin revaskülarizasyonudur. İnfarktüs alanında olsa bile, LAD revaskülarize edilmelidir. Beş yıllık yaşam, LAD'ye LIMA greftlemesi yapılanlarda %88, ven grefti kullanılanlarda %72, revaskülarizasyon yapılmayanlarda %65 olarak bildirilmiştir.

Sonuçlarda dikkati çeken diğer bir önemli nokta, diskinetik anevrizmalarda sonuçların daha iyi olmasıdır. Akinetik anevrizmalarda ameliyat sonrası dönemde inotropik ilaç ve IABP kullanımının daha fazla olduğu bilinmektedir. Ameliyat sonrası dönemde EF'deki artış diskinetik anevrizmalı olgularda daha fazladır. Dor ve arkadaşları istatistiksel olarak her iki grup arasında fark olmadığını bildirmekteyse genel görüş akinetik anevrizmalı grupta sonuçların daha kötü olduğu şeklindedir.

Sonucu etkileyen önemli bir faktör olarak bilinen mitral yetmezliği olguların çoğunda önemli ölçüde düzelmektedir. Bu düzelme;

- Ventrikülün küçültülmesine bağlı olarak anülüsün de küçülmesi,
- Revaskülarizasyon sonrası papiller adale disfonksiyonunun düzelmesi,
- Ventrikül geometrisinin düzelmesine parelel olarak papiller adalenin doğru konumuna gelerek daha etkili fonksiyon görmesi gibi postoperatif gelişmelere bağlanmaktadır. Ancak ikinci dereceden daha fazla mitral yetmezliklerinde tercihen anüloplasti ile mitral yetmezliğinin tamir edilmesinin prognozu olumlu yönde etkileyeceği unutulmamalıdır.

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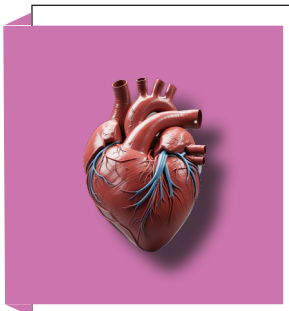

KALP CERRAHİSİNDE HEMORAJİK VE TROMBOTİK KOMPLİKASYONLAR

BÖLÜM
53

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Kapak hastalarında sol atriyumda, sol ventrikül anevrizmalı hastalarda sol ventrikülde yer alabilecek trombüslerin krosklemp konmadan önce kanülasyon esnasında embolizasyona yol açmamaları için gerekli özen gösterilmelidir. Kalp fazla manuple edilmemeli, sol atriyal ventilasyon için kanül kros-klemp sonrası konulmalıdır. Bu tip hastalarda ve kalsifik kapak hastalığı olanlarda kros-klemp sonrası trombüs veya kalsifikasyon tamamen temizlenmeli, kalp boşluklarında partikül kalmadığından emin olunmalıdır. Yine konjenital kalp hastalarında kanülasyon esnasında olabilecek hava embolizasyonlarına dikkat edilmesi gerekmektedir.

Kapak replasmanları sonrasında Coumadin ile yeterli antikoagulasyon sağlanana kadar (INR yaklaşık 2,5) tromboembolik olaylar azda olsa gözlenebilmektedir. Bu komplikasyondan sakınmak için replasman yapılan hastalarda, bazı klinikler gibi bizde hastanın drenajı kesildikten sonra (genellikle 1218 st sonra) ilk doz warfarin ile birlikte yeterli INR değeri sağlanana kadar fraksiyone heparin ajanları kullanmaktayız.

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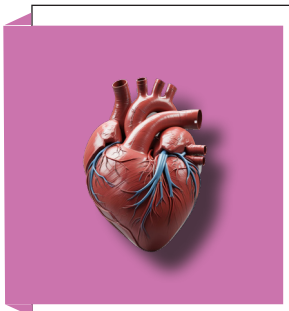

DERİN STERNAL YARA ENFEKSİYONLARI

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54

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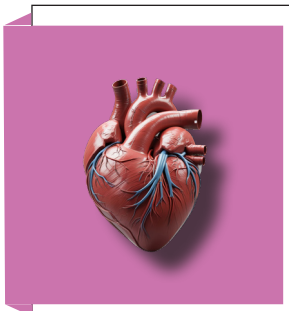

KRONİK TROMBOEMBOLİK PULMONER HİPERTANSİYONDA PULMONER TROMBOENDARTEREKTOMİ

BÖLÜM
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tadır. Bu tablonun önüne geçmek açısından bazı gruplar ameliyat öncesi rutin olarak inferior vena kava filtresi konulmasını önermektedirler. Bu konuda bizim yaklaşımımız rutin filtre konulmaması yönündedir. Ayrıca ameliyat sonrası erken dönemde hastanın drenaj durumuda göz önüne alınaraktan heparin başlanılmalı ve sonrasında hayat boyu warfarin kullanımına geçilmelidir (58,59). Son yıllarda direkt oral antikoagulanlar (DOAK) sıklıkla kullanılmaya başlanmıştır. Öte yandan warfarin ile DOAK arasında yapılan çalışmalar da DOAK kullanılan hastalarda reküren tromboemboli riskinin daha fazla olduğunu göstermiştir (60). İnoperabl hastalarda medikal tedavi ayrı bir konu olduğu için burada detaylı olarak değinilmemiştir.

BALON PULMONER ANJİYOPLASTİ

Balon pulmoner anjiyoplasti (BPA), sıklıkla inoperabl veya pulmoner endarterektomi sonrası semptomatik kalıcı/reküren pulmoner hipertansiyonu olan hastalarda başvurulan bir tedavi yöntemidir. Kronik tromboembolik pulmoner hipertansiyon hastalarının yaklaşık %40 ı distal hastalık, komorbidite veya diğer nedenlere bağlı olarak inoperabl kabul edilmektedir. Pulmoner arter içerisinde darlık oluşturan fibrotik bantları balonla açarak pulmoner arterde distale olan kan akımını arttırır. Pulmoner endarterektomiye uygun olmayan hastalarda medikal tedaviye göre sonuçları daha iyidir. Bununla birlikte belirli komplikasyonları olan bir tedavi yöntemidir. Komplikasyonların başında pulmoner arter perforasyonu ve rüptürü gelmektedir. Bunlara bağlı olarak hastada hemoptizi ve hipoksemi ortaya çıkabilir. Literatürde BPA komplikasyon oranı olarak %2-4 olarak belirtilmektedir (61-63).

SONUÇ

Kronik tromboembolik pulmoner hipertansiyon tedavisinde, PTE ameliyatı, sonuçları açısından yüz güldürücü bir cerrahi prosedürdür. Bu hasta grubunda PTE ameliyatının tek alternatifinin akciğer nakli olduğu düşünüldüğünde bu ameliyatın ne kadar önemli olduğu ortaya çıkmaktadır. Çeşitli merkezlerce yayınlanan vaka serilerinde mortalitenin % 5-15 arasında değiştiği görülmektedir (64-66). Geç dönem takiplerinde ise 5 yıllık hayatta kalım oranının %75 lerde olduğu bilinmektedir. Hastaların büyük çoğunluğunun klas 1-2 fonksiyonel kapasitede olması ve normal hayatlarına dönmesi tedavinin etkin olduğunu göstermektedir.

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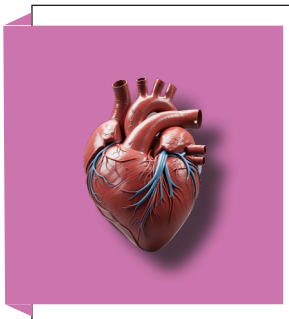

PULMONER VASKÜLER HASTALIK

BÖLÜM
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kapatılması, kliniği kötüleştirir. Eisenmenger sendromu gelişmiş hastalarda şantın kapatılması kontrendikedir. Ancak son dönemde Eisenmenger gelişmemiş olsa daASD gibi pre-triküspit şantı bulunan hastalarda PVR>5 WU ise şantın kapatılması kontrendike olarak kabul edilmektedir. Bu hastalarda PAH tedavisi ile PVR değeri 5WU altına gerilese bile kapatılma kararının dikkatle ve hasta bazlı alınması gerekmektedir. VSD ve PDA gibi post-triküspit şantlarda ise PVR> 5 mmHg ise şantın kapatılmasının kötü sonuçlanabileceği ve bu kararın multidisipliner olarak hasta bazlı değerlendirerek vermek gerektiği bilinmelidir. PVR 3-5 WU arasında ise şantın öneri düzeyi IIa, kanıt düzeyi C ile kapatılabileceği unutulmamalıdır. Eğer PVR<3 WU ise şant öneri düzeyi I, kanıt düzeyi C ile kapatılmalıdır (1).

Seçilmiş vakalarda kalp-akciğer nakli veya kardiyak cerrahi ile birlikte akciğer nakli düşünülebilir. Fakat bu alanda donör yetersizliği olması bu kararı zorlaştırmaktadır. Transplantasyon tedavisi sonrasında birinci yılda özellikle kalp-akciğer transplantasyon hastalarında mortalite oranları yüksektir (46). İzole Akciğer naklinin bazı PHT etiyolojilerinin tedavisinde yeri olsa da kalp hastalığına sekonder görülen PHT'de yeri yoktur. Bu hastalarda mutlaka altta yatan kardiyak patolojinin onarılması veya kalp-akciğer transplantasyonunun düşünülmesi gerekir. Grup 4 PHT hastalarında özellikle KTEPH hastalarında ise Pulmoner endarterektomi bir tedavi modalitesi olarak uygulanabilmektedir. KTEPH merkezlerinde bu operasyonun perioperatif mortalitesi %2,5'in altındadır (47). Hastaların %25'inde postoperatif PHT sebat etse de 3 yıllık sağkalım %90'lardadır (48-50).

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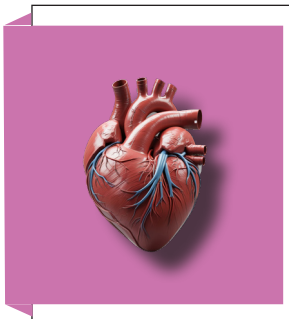

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3. Enfekte doku ve yapıların her türlü cerrahisi
4. Gastrointestinal, üriner kanalların ve solunum yollarının cerrahileri

Antibiyotik profilaksisi ESC 2009 kılavuzunda sadece jinjival dokunun, dişin periapikal alanının manipülasyonunu ve oral mukoza perforasyonunu içeren işlemlerde önerilmekte iken, 2023 versiyonunda solunum, gastrointestinal, genitoüriner sistem, cilt veya kas-iskelet sistemlerine yönelik invaziv tanı veya tedavi prosedürü uygulanan yüksek riskli hastalar için Sınıf IIb kanıt düzeyi C olarak önerilmektedir (22). Özellikle yapay kapağı olan bireylerde tüm invazif girişimlerde bakteriyemiye neden olmama yönünde tedbirler alınmalı, kateterler sondalar takılırken asepsi antisepsiye dikkat edilmeli, bunlar en kısa zamanda çekilmelidir. Bakteriyemi gelişirse yapay kapağı tutma oranı yüksektir, 6 hafta kadar etkili tedavi gerektirir.

Oral, dental girişimlerde, müdahaleden 30 dakika önce erişkinler için tek doz, oral 2 gram, çocuklarda 50 mg/kg amoksisilin yeterli görülmekte, ilave idame dozu önerilmemektedir. Amoksisiline allerjiklerde klindamisin, azitromisin, klaritromisin, sefadroksil, sefaleksin kullanılabilir. Genitoüriner, gastrointestinal girişimlerde, hafif-orta riskli olgularda yukarıdaki dozlarda amoksisilin veya ampisilin, yüksek riskli olgularda intravenöz veya intramüsküler amoksisilin veya ampisiline (2 gr veya 50 mg/kg) ilave gentamisin (120 mg'ı geçmeyecek şekilde 1.5 mg/kg, IV veya IM) verilmeli ve 6 saat sonra 1 gr (25 mg/kg) oral amoksisilin veya aynı doz IV-IM ampisilin tekrarlanmalıdır. Ampisilin veya amoksisiline allerjik yüksek riskli olgularda bunların yerine gentamisinle beraber girişimden 30 dakika önce bitecek şekilde, 1 – 2 saatlik infüzyon halinde 1g (20 mg/kg) vankomisin tatbik edilmelidir.

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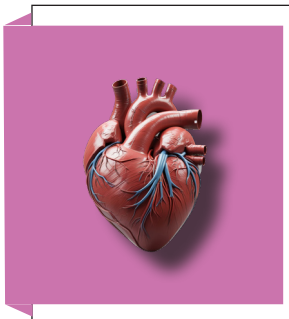

KALP VE DAMAR CERRAHİSİNDE NÖROLOJİK KOMPLİKASYONLAR

BÖLÜM
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Son birkaç yılda ise BT ve MRG tekniklerindeki gelişmelerin paralelinde EVT uygulama zaman aralığı 24 saate uzamıştır. (65, 66) Nörogörüntülemedeki ilerlemeler EVT ile ilgili uygulama çizelgelerini değiştirmiştir (10, 67-69) Hazırlanan güncel kılavuzlar, inme triyajı ve hasta seçiminde görüntülemenin önemini göstermiştir. (44, 67, 70) (Tablo 7)

Sonuç olarak, kardiyovasküler cerrahide değişim dinamik bir süreçtir; eski yöntemlerin yerini alan yenilikçi yaklaşımlar hem hasta güvenliğini artırmakta hem de klinik sonuçları önemli ölçüde iyileştirmektedir. Gelecekte sağlık hizmetlerinde kişiselleştirilmiş tedavi stratejilerini öne çıkaracak yenilikçi çözümler bekleniyor. Kardiyoloji pratiğinin devam eden evrimi ile paralel olarak, sürekli eğitim temelli araştırmalar yapmak kritik öneme sahiptir.

Hasta merkezli bir yaklaşım, bu süreçteki herhangi bir yeniliğin merkezinde yer alır ve hasta bakımında gözle görülür iyileşmeler sağlar.

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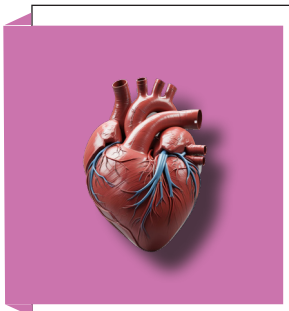

KARDİYAK ARİTMİLERİN CERRAHİ TEDAVİSİ

BÖLÜM
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hızı belilenen değerleri aştığında aritminin başlangıcından 15-20 saniye sonra yaklaşık 25 jul'luk bir çıkış sağlanır.Akım kaynağı bir mıknatısla noninvaziv olarak aktive veya inaktive edilebilir.Dışarıdan bir aygıtla bataryanın doluluk derecesini ve kaç deşarj kaldığını anlamak ve görüntülemek mümkündür.

Genel olarak AICD implantasyonu, elektrofizyoloji laboratuarında, hafif sedasyon altında transvenöz yol kullanılarak gerçekleştirilir. İşleme bağlı mortalite %1 civarındadır.(137,138) Sol torakotomi, median sternotomi, subkostal yada subksifoid yaklaşım teknikleri hemen hemen terkedilmiş, günümüzde pek kullanılmayan tekniklerdir.

Hızlı atriyal taşikardilerde yanlış algılamaya bağlı uygunsuz şok hasta için çok rahatsız edici olabilir. Kullanılan geliştirilmiş algılama sistemleri her nekadar bu komplikasyonları azaltmışsa da tamamen önleyememiştir.Elektrodun yerinden oynaması ve migrasyon diğer önemli bir komplikasyon olup, enfeksiyon gelişimi en ciddi komplikasyonu oluşturmaktadır. Bu durum tüm sistemin sökülmesini gerektirebilir.

Günümüzde AICD Teknolojisi:

- Yeni cihazlar şok dışında anti-takikardi pacing (ATP) de yapabiliyor.
- Altına yerleştirilen subkutan AICD seçenekleriyle damar içi elektrot gerekmeyebiliyor.
- Uzaktan takip sistemleriyle cihazlar evden izlenebiliyor.
- Pil ömrü ve programlanabilirliği gelişmiş durumda.

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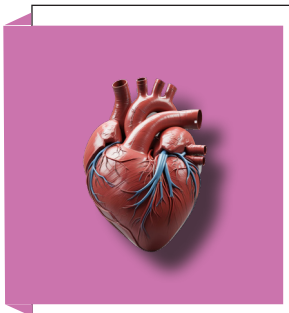

KALP YARALANMALARI

BÖLÜM
60

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içi yabancı cisimler kolayca ayırt edilir. Bunlara ek olarak ventriküler fonksiyonla, intrakardiyak hava varlığı ve tamiri takiben kalan rezidüel defektlerle ilgili bilgi verir.(2,10,11,12,13,14)

Prognoza Etki Eden Faktörler

Penetran kalp yaralanmalarında survi yayınlanmış en geniş serilerde %3 ile %84 oranında bildirilmiştir. Sonuçlardaki bu büyük fark hastane öncesi mortalitenin seriye dahil edilip edilmediği ile ilgilidir. Genel olarak tüm literatürler yorumlandığında, yaralanma mekanizmasının ve hastaneye ulaşıldığı an daki hastanın fizyolojik durumun sonucu etkileyen en önemli prognostik faktör olduğu tespit edilir. Ateşli silahla yaralanma ve geldiğinde hastanın vital bulgularının olmaması kötü sonuca, KDAY ve geldiğinde hastanın vital bulgularının olması da iyi sonuca işaret eder. Bundan başka prognoza etki eden faktörler;(1) tek kalp boşluğu yaralanması/birden fazla kalp boşluğu yaralanması,(2) sağ ventrikül yaralanması/sol ventrikül yaralanması,(3) kardiyak tamponadın olması/olmaması,(4) izole kardiyak travma/birlikte multiorgan travması varlığıdır.

Penetran kalp yaralanmalarında mortalite eski çalışmalarla karşılaştırıldığında günümüzde de yüksek olarak devam etmektedir.Bunda günümüzde ateşli silahla yaralanmaların daha fazla olması ve daha önceden eksitus olarak bildirilen hastaların şimdi vital bulguları alınamayan hasta olarak bildirilmesinin rolü vardır.(2,10)

Sonuçlar

Penetran kalp yaralanmaları nadir ve son derece öldürücü özel klinik sonuçlar oluşturan bir travma şeklidir. Travmalı hastaya yaklaşımda, kardiyovasküler cerrahide dikkat çekici gelişmelere rağmen sonuçlar hala yüzgüldürücü değildir. Travmanın sosyal sebeplerini düzeltilmesi, sivil halkın ateşli silah sahipliğinin azaltılması alınacak önlemler arasındadır. Hızlı transport, hızlı tanı ve operasyon hayat kurtarıcıdır. Unstabil hastalarda tetkiklerle zaman kaybetmeksizin, sadece klinik şüphe ile acil cerrahi müdahale önemlidir.(10)

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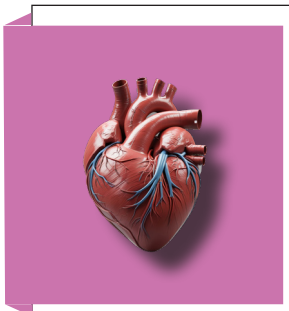

PERİKART HASTALIKLARI VE CERRAHİSİ

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61

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tedavisinin 8. haftasından sonra gelişen perikardit ise diyaliz perikarditi olarak tanımlanır. Tedavi yaklaşımı erken evrelerde diyaliz uygulamasını içerirken, dirençli olgularda diyaliz sıklığı ve etkinliği artırılmalıdır. Daha nadir olmakla birlikte, bu hastalarda konstrüktif perikardit de görülebilir.

Postkardiyak hasar sendromları: Miyokart enfarktüsü sonrasında gelişen perikardit, postperikardiyotomi sendromu ve posttravmatik perikarditi kapsar. Kardiyak hasar sonrası ortaya çıkan ve başka bir nedenle açıklanamayan ateş, perikardiyal ya da plöritik göğüs ağrısı, perikardiyal ya da plevral sürtünme sesi, perikardiyal efüzyon, plevral efüzyona eşlik eden CRP yüksekliği kriterlerinden en az 2 tanesinin olması ile tanı konur. Antiinflamatuar tedavi önerilir (13).

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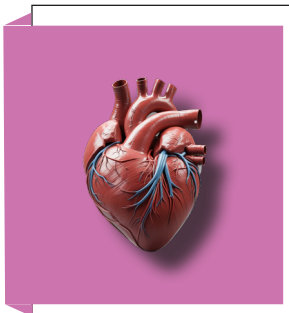

KALP TÜMÖRLERİ

BÖLÜM
62

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kolaylıkla yapılabilir ve metastatik hastalığı olan genel durumu bozuk hastalarda oldukça etkilidir ve kalp tamponadı bulgularını düzeltir. Press ve Livingston(98) toplam 100 hastalık dört seriyi değerlendirdiklerinde, malign kalp tamponadı olup da subksifoid perikardiyotomi ile tedavi edilenlerin tümünde tamponad bulgularının kaybolduğunu yalnızca üç olguda rekürrens görüldüğünü ve hiç ölüm olmadığını bildirdiler. Sol anteriyor torakotomi veya VATS ile plöroperikardiyal pencere açılarak malign perikard efüzyonlarının etkin tedavisi yapılabilir; ancak bu uygulama genel anestezi gerektirir ve ilerlemiş kanser nedeniyle hemodinamisi bozulmuş hastalarda anlamlı morbidite ve mortalite ile birliktedir. Malign perikardiyal efüzyonu olan olgularda radyoterapi ve kemoterapi perikardial efüzyonların kontrol edilebilmesi için diğer uygulanabilecek tedavi alternatifleridir.

İnfradiafragmatik Tümörlerin Direkt Yayılımı

Renal hücreli karsinomalı hastaların yaklaşık %5-10'unda vena kava inferiorun endovasküler invazyonu görülebilir ve bu olguların %40'ında sağ kalbe kadar invazyon ilerleyebilmektedir. Son zamanlarda bu tümörlerin tedavisinde radyoterapi ve kemoterapinin inefektif olduğu gösterilmiştir. Kaval ve kardiak uzantılarının çıkarılması ile birlikte renal kitlenin radikal rezeksiyonu endikedir ve sağ atriyumdaki tümör yayılımı cerrahi ile etkin biçimde düzeltilebilir.(94,99)Vena kava inferior ve sağ kalbe uzamış malign renal neoplazmlara asendan aortik, superior vena kava ve kommon femoral ven kanülasyonu ile kardiopulmoner bypass kullanılarak cerrahi yaklaşım yapılır. Tümör trombüsü vena kava ve atrium intimasına nadiren sıkıca yapışmıştır, ve genellikle tümör çıkarılması kavatomi ve atriotomi ile yapılır.(99) Çok yapışık ve kanamalı vakarda derin hipotermik total sirkülatuar arrest de tümörün çıkarılmasında uygulanabilecek alternatif bir yaklaşım yöntemidir. (94,99) Bu teknikle diğer gösterilebilen metaztazları olmayan vena kaval invazyonlu olgularda 5 yıllık sağkalım %55 iken 10 yıllık sağkalım %43 olarak bildirilmektedir.(94,99)

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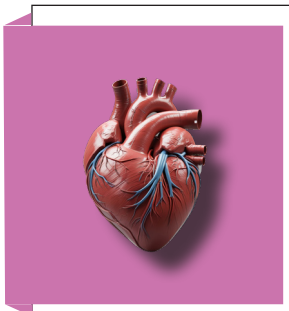

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KALP VE DAMAR CERRAHİSİNDE KALİTE YÖNETİMİ VE RİSK KADEMELENDİRMESİ

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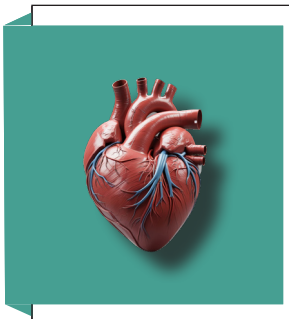

İNTRAAORTİK BALON

BÖLÜM
64

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helyum /CO2 salınan volümü azdır ve nonfataldir (72) Aterosklerotik plağın balonu kesmesiyle oluşur. Tedavide balon alınır ve tekrar yerleştirilir.

Ancak son yıllarda IABP'daki gelişen teknolojinin etkisi ve IABP kullanım sıklığı nedeniyle komplikasyonlardaki oranın azaldığı görülmüştür (73).

Sonuç olarak; IABP hemodinamiyi iyi olmayan hastalardaki bu etkileri gözönüne alınırsa, VAD kullanımına ihtiyacı olan hastalarda IAB' ın pre-intra-postoperatif dönemde destekleyici rolünün önemli olduğu görülmektedir (74).

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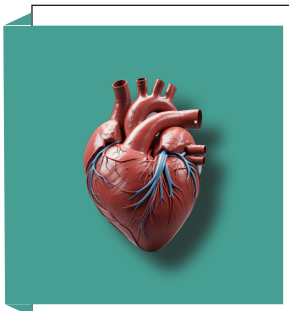

VENTRİKÜLER DESTEK SİSTEMLERİ

BÖLÜM
65

Deniz Süha KÜÇÜKAKSU [1]

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Ventriküler destek sistemleri; kalp yetersizliği gibi son evresinde en malign kanserlerden bile daha hızla ölüme götüren bir hastalığa yönelik günümüzde ve yakın gelecekte de en önemli tedavi modalitelerinden birini oluşturmaktadır. Bu sistemler için kalp damar cerrahisi kliniği içinde transplantasyon ve mekanik dolaşım destekleyici sistemler bölümleri kurulmalıdır. Bu bölümün hastane içindeki diğer bölümlerle (kardiyoloji, acil v.b) yakın ilişkisinin organizasyonu oluşturulmalıdır. Kalp nakli merkezlerinde kurulacak yüksek teknolojili ve yetişmiş özel ekipli bölümlerin, bölgesel olarak diğer hastanelere hizmet vermesi (VDS merkezi) sağlanmalıdır. Bu hastaların evlerinde, işlerinde rahatça yaşamaları içinde gerekli toplumsal düzenlemelerin yapılması da gereklidir..

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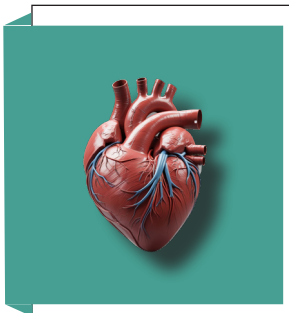

TOTAL YAPAY KALP

BÖLÜM
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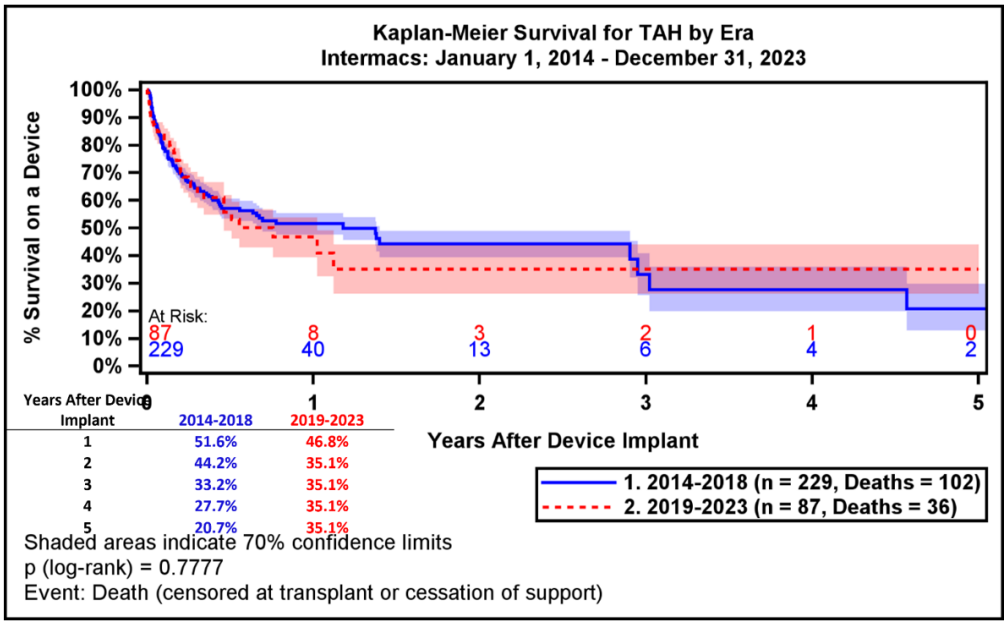

Resim 6. *Tarihsel (2014-2018) ve güncel (2019-2023) dönemlere göre sınıflandırılmış TAH implantasyonu uygulanan hastalar için Kaplan-Meier sağkalım analizi.*

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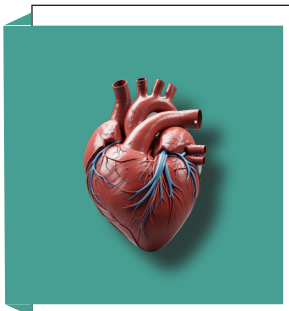

ECMO (EXTRAKORPOREAL MEMBRAN OKSİJENASYONU)

BÖLÜM
67

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nunun değerlendirilmesinde genel biyokimyasal tetkiklerle birlikte arter kan gazı örnekleri ve laktat değerleri kullanılabilir. Tüm bu değerlendirmelerin ışığında akım değerleri kademeli olarak azaltılarak hasta ayrılmaya hazırlanır. Literatürde yapılmış kontrollü bir çalışma olmamakla birlikte, yüksek tromboz ve emboli riski nedeniyle, erişkinlerde 1L/dk akım değerlerinin altında, dekanülasyon işlemi geciktirilmemelidir. Kalp yetmezliği nedeniyle VA-ECMO desteği alan hastaların büyük çoğunluğu bir hafta içinde ECMO desteğinden ayrılabilmektedirler. ECMO desteğinin uzamasının, mortalite ve morbidite oranlarına, ciddi olumsuz etkisi olduğu bilinmektedir. Bu süreçte gelişebilecek, kanama ve ekstremite iskemisi gibi komplikasyonlar mortal seyredebilir. Bu nedenle koagülasyon parametreleri ve ekstremite perfüzyonunun periodik değerlendirilmesi büyük önem taşımaktadır. Periferik ECMO uygulamalarında dekanülasyon işleminin uygun hastalarda lokal anestezi altında yapılması tercih edilebilir. Perkütan ECMO uygulamalarında, femoral eksplorasyon ile kullanılan arterin ve venin cerrahi onarımı yapılarak dekanülasyon tamamlanır. Aort, aksiller veya subklavyen arter greft aracılı VA-ECMO uygulamalarında, dekanülasyon sonrası, greftin anastomoz seviyesinin hemen üstünden bağlanması, cerrah için kolaylık sağlamasının yanı sıra onarım bölgesinde oluşabilecek damar daralmalarını da önler.

Akut, hipoksemik veya hiperkapnik solunum yetmezliği nedeniyle VV-ECMO uygulamaları uzun süreli olsa da destekden ayırma oldukça basittir ve klinisyenlerin yatak başında yapmalarına olanak tanır. Normal kardiyak fonksiyonu olan hastanın kabul edilebilir mekanik ventilasyon parametreleriyle (tepe basıncı $\leq$ 30 cmH_2O, PEEP $\leq$ 15 cmH_2O, tidal hacim $\leq$ 6 mL/kg tahmini ağırlık, RR $\leq$ 35 rpm ve $FiO_2 \leq$ %60) gaz değişimini tatmin edici şekilde sürdürebilmesi ve buna iyileştirilmiş radyografik parametreler ve pulmoner uyumun eşlik etmesi durumunda başlatılabilir (14). Kan akışını koruduktan ve gaz mikserini kapattıktan sonra, hastanın SaO_2 ve $PaCO_2$'si takip edilmelidir. Deneme sırasında, devrede trombüs oluşma riskini azaltmak için < 2 L/dakika ECMO akışlarından kaçınılmalıdır (1,18). Ecmo desteği kapatıldıktan sonra 2 ile 4 saat içerisinde tidal hacim ve gaz değişimi yeterliyse (yani, tidal hacim 5 mL/kg, PaO_2 10 kPa [75 mmHg] ve $PaCO_2$ 7 kPa [52 mmHg]), ECMO kesilebilir ve hasta dekanüle edilebilir. (22). Kanül çıkarılırken, hasta Trendelenburg pozisyonunda olmalı ve hava embolisi riskini azaltmak için kısa etkili paraliz yapan farmakolojik ajanlar veya Valsalva manevrası yapmalıdır. Derin ven trombozunu tespit etmek için dekanülasyondan sonra rutin venöz Doppler ultrasonu yapılmalıdır (1).

Hibrid ECMO konfigürasyonlarında, ECMO'dan ayrılmanın temel prensibi, hastanın ihtiyacı olan komponenti koruyacak şekilde, öncelikle VV veya VA konfigürasyonuna geçmektir. Örneğin VAV-ECMO konfigürasyonunda destek verilen bir hastada, hastanın hemodinamik destek ihtiyacı kalmadıysa, öncelikle VV-ECMO konfigürasyonuna geçilir. Bundan sonra standart ayrılma prosedürleri uygulanabilir.

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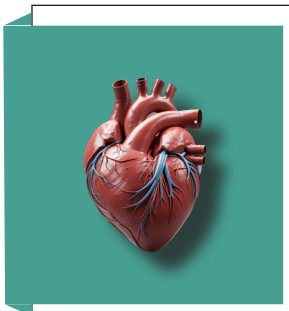

KALP YETMEZLİĞİNDE GEOMETRİK TEDAVİ

BÖLÜM
68

Cüneyt KONURALP [1]

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bu anatomik manevralar da bir süre sonra yetersiz kalmakta veya kontroldan çıkmaktadır. Bu durumda, bizim o anki fiziksel koşullara göre bu pompanın en optimal geometriyi almasına yardım etmemiz gereklidir. Bunun için gerekirse Kutsal Geometri öğretilerinden de istifade etmeliyiz. Fizik kanunları ile yarışamayız. Kalbin yükünü ne kadar azaltırsak azaltalım ve miyokardı ne kadar kamçılarsak kamçılayalım, eğer bozulan geometriyi düzeltmezsek pompa/empedans sisteminin yetersiz kalmasına engel olamayız.

Geometrik yaklaşımın benimsenmesi, değişik tedavi stratejileri için hekimlerin hayal güçlerini ve gözlem yeteneklerini daha çok kullanmalarını gerektirecektir. Göründüğü kadarıyla kalp cerrahisi, cerrahın kardiyak materyalle **bir mühendis** ve **bir sanatçı** gibi oynayacağı bir döneme girmek üzeredir.

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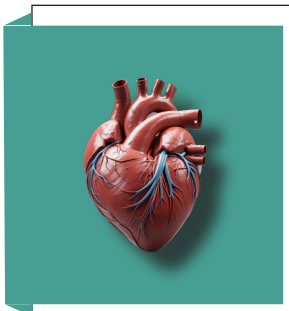

KALP VE DAMAR CERRAHİSİNDE REJENERATİF TEDAVİLER

BÖLÜM
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Sonuç olarak, rejeneratif tıp, kardiyovasküler cerrahi pratiğinde yalnızca destekleyici değil, aynı zamanda hastalığın seyrini değiştirme potansiyeline sahip yenilikçi bir tedavi paradigması olarak görülmektedir.

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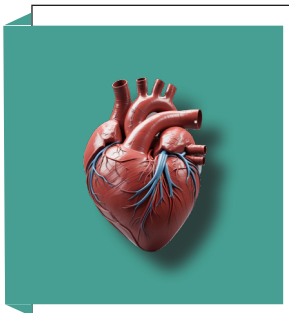

KALP TRANSPLANTASYONUNDA İMMÜNOLOJİ VE İMMÜNOSUPRESYON

BÖLÜM 70

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eklenmesi) düşünülmelidir. Humoral rejeksiyon sonrası tekrar DSA düzeyleri ve kompleman C4d birikimi de izlenmelidir. Rejeksiyonun tamamen kontrol altına alınamaması durumunda mekanik destek tedavileri gündeme gelir.

Son yıllarda, rejeksiyon tedavisinde **biyobelirteç temelli kişiselleştirilmiş yaklaşım** önerilmektedir. Özellikle **granzyme B, perforin mRNA düzeyleri, donor-derived cell-free DNA (dd-cfDNA), troponin I ve NT-proBNP** gibi parametreler, rejeksiyonun erken tespitinde yardımcı olmakta ve tedaviye yanıtın değerlendirilmesinde kullanılmaktadır. Örneğin dd-cfDNA düzeylerinin %0.2 üzerine çıkması akut rejeksiyon göstergesi sayılabilir. Bu nedenle biyobelirteçlere dayalı algoritmalar, özellikle subklinik rejeksiyonları erken evrede tespit etmede yardımcıdır. Ayrıca rejeksiyon sırasında sistemik sitokin düzeylerinin artışı (IL-2, IFN-γ, TNF-α) da sitokin soğurma filtrelerinin destekleyici tedavi olarak kullanılmasını gündeme getirmiştir.

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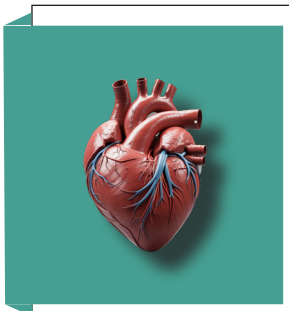

İNTRATORASİK ORGAN PREZERVASYONU

BÖLÜM
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İskemi-reperfüzyon hasarının azaltılması amacıyla, genetik mühendislik ve biyoteknoloji tabanlı stratejiler umut vaat etmektedir. Özellikle antioksidan gen terapileri, inflamatuar yanıtı baskılayan RNA bazlı tedaviler ve hücresel dayanıklılığı artıran biyomühendislik yöntemleri araştırılmaktadır. Gen düzenleme teknikleri (CRISPR-Cas9 gibi), hücresel düzeyde iskemiye karşı dayanıklılığı artıran proteinleri kodlayan genleri aktive edebilir veya zararlı sinyal yollarını inaktif hale getirebilir (81).

Kalp-akciğer nakillerinde akciğer prezervasyonu, transplantasyonun başarısını belirleyen en kritik faktörlerden biridir. Uygun prezervasyon tekniklerinin seçimi, iskemi süresince doku bütünlüğünün korunmasını sağlayarak nakil sonrası komplikasyonları en aza indirir ve organın fonksiyonel kapasitesini artırır. Geleneksel statik soğuk depolama yöntemleri, akciğer saklamada yaygın olarak kullanılsa da makine perfüzyonu, sub-zero koruma stratejileri ve biyoteknolojik yaklaşımlar gibi yenilikçi yöntemler, iskemi-reperfüzyon hasarını azaltarak transplantasyon sonuçlarını iyileştirme potansiyeline sahiptir. Bu gelişmeler, bağışlanan organların daha uzun süre korunmasını sağlarken, marjinal donör akciğerlerinin kullanımını artırarak transplant bekleme listelerindeki hasta sayısının azaltılmasına katkıda bulunabilir. Gelecekte, genetik mühendislik, nanoteknoloji destekli tedaviler ve immünmodülatör yaklaşımlarla desteklenen gelişmiş prezervasyon teknikleri, akciğer transplantasyonlarının uzun vadeli başarısını artırarak hasta yaşam süresi ve kalitesinde önemli iyileşmeler sağlayacaktır.

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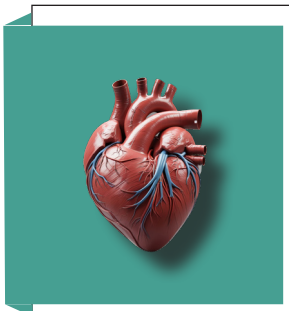

KARDİYAK DONÖR SEÇİMİ VE BAKIMI

BÖLÜM
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post-nakil immünsupresyonu dönüştürebilir. Donör ve alıcıya özgü immünogenetik özelliklere göre tedavi protokollerinin bireyselleştirilmesi, reddi azaltabilir, uzun dönem greft sağkalımını iyileştirebilir ve yan etkileri azaltabilir.

Çok Uluslu ve Bölgesel İş Birlikleri: Gelecekteki başarı, uluslararası veri paylaşımı, bölgesel donör ağlarının kurulması ve küresel kalite ölçütleri ile yakından bağlantılı olacaktır. Güçlü sağlık altyapısına sahip olan Türkiye, yapısal engellerin aşılmasıyla bu tür iş birliklerinden hem fayda sağlayacak hem de katkıda bulunabilecek konumdadır.

Ulusal Derneklerin Rolü: Türkiye'de Türk Kalp ve Damar Cerrahisi Derneği (TKDCD), Türk Kardiyoloji Derneği (TKD) ve organ nakli alanında faaliyet gösteren diğer ulusal dernekler, kalp nakli pratiğinin şekillendirilmesinde kritik role sahiptir. Bu kuruluşlar; ulusal donör seçimi ve bakım kılavuzlarının hazırlanması, donör koordinatörleri ve organ çıkarım ekipleri için standart eğitim programlarının geliştirilmesi, aile reddini azaltmaya yönelik kamuoyu farkındalık kampanyalarının yürütülmesi gibi çok boyutlu katkılar sağlayabilir. Ayrıca T.C. Sağlık Bakanlığı ile iş birliği içinde politika geliştirme süreçlerinde aktif rol üstlenmeleri, DCD programlarının entegrasyonu, adil organ dağıtımının sağlanması ve ex vivo perfüzyon, yapay zekâ gibi yenilikçi teknolojilerin ulusal pratiğe kazandırılması açısından büyük önem taşımaktadır.

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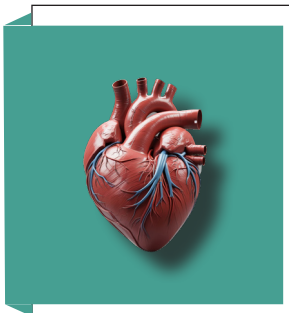

KALP TRANSPLANTASYONU

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İçindekiler

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beklentisi %85'den fazla ve 10 yıllık yaşam beklentisi %50-60 arasındadır. Cleveland kliniğin kalp transplantasyonu sonuçlarında, sağ kalım oranları, ilk ay %96, 1. Yıl %89, 3. Yıl %85, 5. Yıl %78 ve 8. Yıl %69 olarak bildirilmiştir. ISHLT verilerine göre, 1982-2007 yılları arasında kalp transplantasyonu yapılmış 78050 hastada, ortalama yarı ömür 10 yıldan fazladır. 1982-1991 yılları arasında transplantasyon yapılmış hastaların ortalama yarı ömürleri 8.8 yıl iken 1992-2001 arası transplant yapılanlarda bu süre 10.5 yıla dek yükselmiştir. Sağ kalım oranları birinci yıl %82, 5. Yıl %69, 10. Yıl %51 ve 15. Yılda %34'dür. (176) İlk yıldaki mortalite nedenlerinin sonraki yıllarla karşılaştırıldığında farklı sebeplerden olduğu görülmektedir. Transplantasyon sonrası ilk 30 gündeki ölümlerin en sık sebebi primer greft yetmezliğidir. Birinci yıl içindeki ölümlerin en sık sebepleri ise akut rejeksiyon ve enfeksiyonlardır. Birinci yıldan sonra ise maligniteler ve kardiyak allogreft vaskülopati (KAV) başlıca mortalite nedenini oluşturmaktadır.(176) Kalp transplantasyonunun başarısını tek başına sağ kalım oranı ile değerlendirmek doğru değildir, hayat kalitesi de göz önünde bulundurulmalıdır.

Hayat kalitesi: fonksiyonel yeterlilik, psikososyal, kişisel ve mental durum ile değerlendirilir. Kalp transplantasyon adaylarının bir yıllık beklenen sağ kalım oranı ortalama 650 olup hayat kalitesi ciddi kalp yetmezliği semptomlarına bağlı ileri derecede kötüdür, Transplantasyon sonrası hastaların %90'dan fazlasında yetmezlik semptomları tamamen kaybolur veya çok azalır Hastaların tamamına yakınında preoperatif fonksiyonel kapasite NYHA sınıf III veva IV iken transplantasyondan sonra sınıf I veya II dir.(182) transplantasyondan 9-13 yıl sonra hastaların %91'inin sınıf I veya II olduğunu ve bunların %79/unun genel durumlarının çok iyi olduğunu bildirmişlerdir. (183) ISHLT verilerine göre 5 yıllık takipte, hastaların 96914'ü hiçbir aktivite kısıtlaması olmadan hayatlarını idame ettirebilmekte, sadece %0.4'ü tamamen diş desteğe bağımlı olarak yaşamaktadırlar.(176)

Fonksiyonel yeterlilik, günlük yaşam aktiviteleri, aile içi aktiviteler, iş hayatı, maddi durum, cinsel fonksiyonlar, yaşama sevinci ve öz güven ile değerlendirilir. Transplantasyon öncesi hastaların çok büyük bir kısmı iş hayatında aktif olarak çalışamaz konumdadır. Transplantasyon sonrası ise hastalar normal kalp fonksiyonları ile üretken insanlar olarak işlerine dönebilirler. Transplantasyon yapılmış 25-55 yaş arası resipientlerin %39.3'ünün birinci yılda tekrar çalışmaya başladığı, 7 yılda ise %54.4'ünün part-time veya tamamen aktif olarak çalışma hayatında yer aldığı bildirilmiştir. (176)

Cinsel fonksiyonlarda transplantasyon öncesi döneme göre önemli düzelmelerin olduğu bilinmektedir. Bir çalışmada cinsel fonksiyon bozukluğunun, transplant öncesi hastaların %84'ünde, transplant sonrası ise %29'unda görüldüğü bildirilmiştir. (184) Transplantasyonu takiben geç dönemde özellikle steroid kullanımına bağlı kas güçsüzlüğü, miyalji, osteopeni veya eklem harabiyetine bağlı günlük aktivitelerde de bozulmalar görülebilmektedir. Aravot ve arkadaşlarının, 5 yıldan fazla yaşayan kalp transplant resipientleriyle yaptıkları çalışmada günlük ortalama yürüyüş mesafesinin 6.5 km olduğunu ve hastaların %60'nın aktif olarak çalıştığını bildirmişlerdir. Hastaların %80'i cinsel fonksiyonlarının yeterli olduğu ve %80'i hayat kalitesinden yeterince tatmin olduklarını ifade etmişlerdir. (185)

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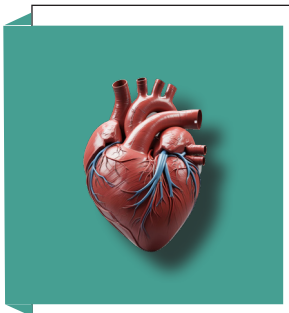

ÇOCUKLARDA KALP TRANSPLANTASYONU

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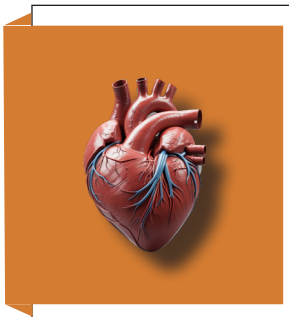

AORT LEZYONLARINDA CERRAHİ NEDEN UYGULANMALIDIR?

BÖLÜM
75

Suat BÜKET [1]
Çağatay ENGİN [2]
Tahir YAĞDI [3]

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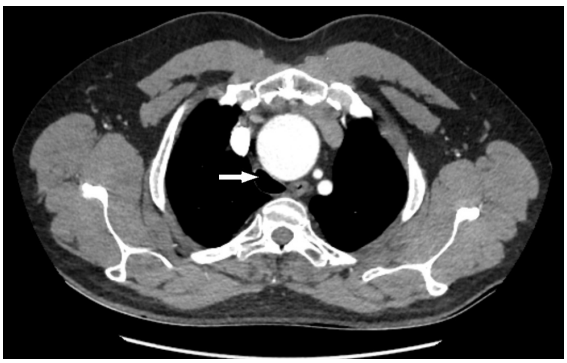
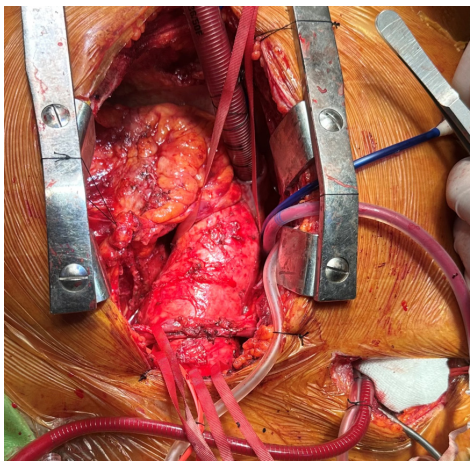
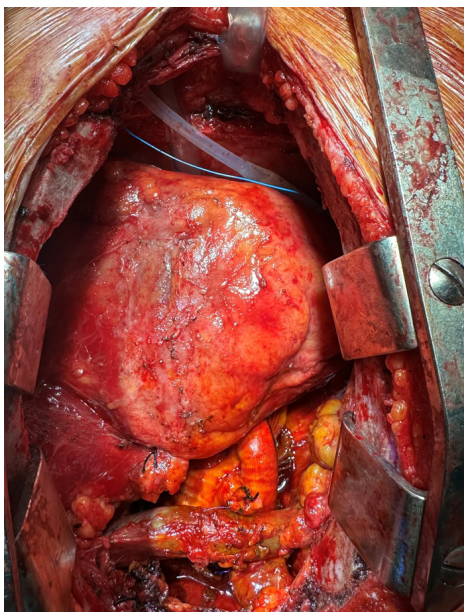


Resim 46. *Asendan ve innominat arter anevrizmalı bir olguda trakea basısı.*



Resim 47. *Asendan ve İnnominat arter anevrizması.*



Resim 48. *Asendan aort ve innominat arter replasmanı.*

Resim 49. *Abdominal aort anevrizmalı bir olguda izlenen trash emboli.*

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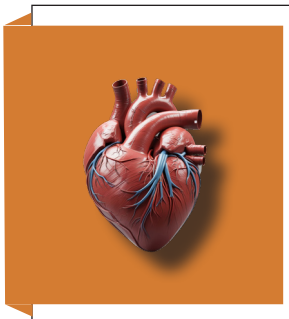

DEJENERATİF AORT ANEVRİZMALARINDA ETİYOLOJİ VE DOĞAL GİDİŞ

BÖLÜM
76

Tanzer ÇALKAVUR [1]

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terit, Behçet Hastalığı, tekrarlayan polikondiritis, tromboanjitis obliterans, periarteritis nodoza, sistemik lupus eritamatozuz, skleroderma, Kawasaki Hastalığı, romatoid artrit, juvenil romatoid artrit, Reiter Sendromu, Sjögren Sendromu, polimyaljia romatika, ankilozan spondilit, Paget Hastalığı, ülseratif kolit, Reidel stroması ve Hashimoto tiroiditi vardır.(5)

DEJENERATİF AORT ANEVRİZMALARININ DOĞAL GİDİŞİ

Anevrizmalı olgularda rüptür riskini hesaplamak ve operasyonu zamanlamak zordur. Modern aort operasyonları genellikle profilaktik, bazen terapatik, nadirende palyatif olarak yapılmaktadır. Profilaktik operasyonlarda amaç ölüme neden olacak anevrizma rüptürünü önlemektir. Çünkü yeri ve nedeni ne olursa olsun anevrizması olan hastalar, eğer başka bir nedenle ölmezlerse, ölüm kaçınılmaz olarak anevrizma rüptüründen olacaktır.(18) Rüptür riskinden korunmak için profilaktik operasyona alınacak olgularda operasyon zamanını saptamadaki en önemli nokta, ölüme neden olacak rüptür riski ile hastada var olan yandaş patolojilerin oluşturduğu risk ve cerrahi riskin birbirine oranlanmasıdır. Eğer hasta anevrizmaya bağlı semptom ve bulgu vermekte ise, cerrahi terapatik amaca yönelik olarak yapılmaktadır. Bu hastaların rüptür riski daha yüksektir. By-pass uygulanarak anevrizmal segmentin bağlanması gibi palyatif yöntemler ise modern tıpta çok nadir endikasyon bulmaktadırlar.

Anevrizma nedeniyle operasyona karar verirken, anevrizmal segmentin yeri, çapı ve etiyolojisine bağlı rüptür risklerini önceden bilmek çok önemlidir. Anevrizmaların rüptür risklerinin saptanmasında genellikle tarihsel kontrol serileri ve anevrizma operasyonunun kontrendike olduğu nadir hasta grupları ele alınmaktadır. Anevrizmalı hastalarda rüptür riskini içeren prospektif bir çalışma yapmak etik olarak mümkün değildir.

Estes ve arkadaşlarının Mayo klinikte, 1950 yılında inceledikleri 102 abdominal aort anevrizmalı hastada yaşam oranının 3 yılda %50, 5 yılda %19 ve 8 yılda %10 olduğunu bulmuşlardır.(19) Hiç bir hasta 10 yıl yaşamamıştır ve olguların 631'ünde ölüm nedeni anevrizma rüptürüdür.

Tedavi edilmemiş infrarenal abdominal aort anevrizmalarında rüptüre bağlı ölüm oranı yapılan araştırmalarda %30 ile %63 arasında değişmektedir.(18,19) İlginç bir nokta, 4 cm ya da daha küçük anevrizması olan olgularda da rüptürün %9.5 oranında ölümden sorumlu olmasıdır. Bu durum küçük anevrizmalarında, büyük anevrizmalar kadar sık olmasada, rüptüre olabileceğini göstermektedir. Abdominal aort anevrizmalarında rüptürün büyük bir kısmı (%80-85) posterolateral olarak retroperitona olmaktadır.

Bickerstaff ve arkadaşları torakal aort anevrizmalarının %75'inde rüptür oluştuğunu ve bunlarında %94'ünün kaybedildiğini bildirmişlerdir. (20) Bu çalışmada cerrahiye giden %11 olguda mortalite %40 bulunmuştur. Elektif cerrahi uygulanmayan hastalarda ise 3 yıllık yaşam oranı %25.7 olarak tespit edilmiştir.

Yandaş hastalık, yaş, küçük anevrizma çapı veya hastanın operasyonu reddetmesi nedeniyle operasyon uygulanmayan 94 torakoabdominal aort anevrizmalı hastada Crawford ve DeNatale 2 yıllık yaşam oranını %24 olarak bulmuşlardır.(21) Bu hastalarda ölümlerin yaklaşık yarısı rüptür nedeniyle gerçekleşmiştir.

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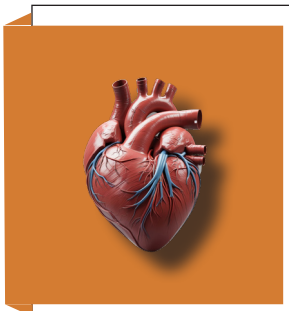

ANEVRİZMATİK ASENDAN AORTA CERRAHİ YAKLAŞIM

BÖLÜM 77

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sı ve sistemik antibiyoterapi verilmesi, pediküllü kas flebleri veya omentum ile greftin sarılması şeklinde yapılabilir.(50)

Omental flep, kanlanmasını sağ gastroepiploik arterden alacak şekilde midenin geniş kurvaturundan ayrılır ve sternuma çevrilir.

Psödoanevrizmalar

Bu anevrizmalar çoğunlukla aort üzerindeki kanülasyon, klemp ve sütür yerlerinden köken alır. Sütür hatlarındaki aşırı gerginlikle oluşan kanamaya bağlı da psödoanevrizma gelişebilir. Ayrıca, Marfan sendromu gibi kistik mediyal dejenerasyonun olduğu vakalarda postoperatif psödoanevrizma gelişme riski artmıştır.

SONUÇLAR

Erken Dönem Mortalite

Asendan aort anevrizmasının elektif onarımından sonra erken dönem hastane ölümlerinin %10'a kadar çıktığını bildiren yayınlar olsa da, cerrahi teknikteki önemli gelişmeler operatif ölüm oranını %3'ün altına düşürmüştür.(51,52) Erken ölümün yaygın nedenleri kalp yetmezliği, felç, kanama ve pulmoner yetmezliktir. Erken mortaliteye neden olan en önemli risk faktörü ise acil cerrahidir. Diğer risk faktörleri ileri yaş, uzamış kardiyopulmoner bypass süresi, kötü sol ventrikül foksiyonu, geçirilmiş aort veya koroner arter cerrahisi ve arkusun olaya katılmış olmasıdır. Marfan hastalarını inceleyen bir çalışmada ise 30 günlük ölüm oranı elektif onarım için %1,5 olarak bildirilmiş, acil cerrahi yaklaşım ise %12'lik erken ölüm oranıyla sonuçlanmıştır.(53)

Geç dönem mortalite

Geç dönem mortalite, hasta özellikleri ve cerrahi tekniğe bağlı olarak değişkendir. Sağkalım oranları 1 yılda %80 ila %95, 5 yılda %70 ila %90, 10 yılda %60 ila %75 ve 14 yılda %50 ila %60 arasında değişmektedir.[54] Elektif olarak aort kök replasmanı geçiren hastalarla ilgili yapılan bir çalışmada hastaların %95'nin 10 yıllık takipte reoperasyondan kurtulduğu görüldü.(55) Uzun dönemde meydana gelen ölümlerin en yaygın nedenleri ise kardiyak ve geri kalan aortta gelişen patolojilere bağlı nedenlerdir. Arkusta ve distal aortta hastalık bulunması geç ölüm için önemli bir risk föktörüdür.(56) Geç ölüm için diğer risk faktörleri ise; ileri yaş, Marfan sendromunun bulunması, NYHA klasının yüksek olmasıdır.(57)

Reoperasyonlar

Reoperasyon nedenleri arasında, psödoanevrizma oluşumu, kapak trombozu, endokardit veya greft enfeksiyonu, doğal kapakta veya kalan aort segmentlerinde hastalığın ilerlemesi veya biyoprotezin dejenerasyonu sayılabilir. Özellikle kronik diseksiyonu veya Marfan sendromu olanlarda geri kalan aorttaki patoloji nedeniyle reoperasyon oranı yüksektir.(58) Ayrıca, reoperasyonların büyük çoğunluğunun ilk ameliyat sırasında yetersiz onarım nedeniyle yapıldığını gösteren çalışmalar da yayınlanmıştır.(59) 10-15 yıllık izlemlerde reoperasyon oranı %5-17 arasında değişmektedir.(57) Crawford'un serisinde tüp greft replasmanı yapılanlarda 1 yıllık reoperasyon oranı %2, kompozit greft replasmanı içinde ise %4 olarak saptanmıştır.(13)

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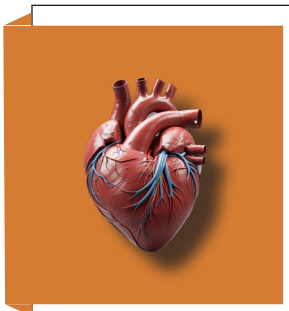

AORTİK ARKUS, CERRAHİ YAKLAŞIM VE SEREBRAL KORUMA

BÖLÜM
78

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lojik komplikasyonlar ve kanama gelmektedir. Arkus cerrahisinde başarının en iyi göstergesi ameliyat sonrası hastanın nörolojik durumudur. Nörolojik komplikasyonlar büyük ölçüde ark cerrahisi sırasında serebral kan akışının kesintiye uğramasının bir sonucudur. Serebral hipoperfüzyona ek olarak, diğer etiyolojik faktörler arasında embolik fenomenler ve kardiyopulmoner baypasa (CPB) inflamatuar yanıt bulunur.

Geniş total arkus replasmanı serilerinde orta hipotermiyle antegrad selektif serebral perfüzyon uygulayan Bachet %17, Kazui ise %13 hastane mortalitesi bildirmiştir.(7,8) Bachet'nin serisinde genel nörolojik komplikasyon oranını %13'dür. Kazui kalıcı strok oranını %3.3, geçici nörolojik bozukluk oranını %6 olarak bildirmiş, kalıcı strok gelişiminin belirleyicilerinin geçirilmiş eski strok ve uzun pompa süresi olduğunu belirtmiştir. Ergin ve arkadaşları, HSA sonrası gelişen nörolojik hasarı; kalıcı hasar (lokalize strok, enfarkt) ve geçici nörolojik bozukluk olarak ikiye ayırmıştır.(17) Geçici nörolojik bozukluk, yetersiz akım ya da koruma sonucu global iskeminin neden olduğu bariz olmayan beyin hasarı sonucu gelişir ve klinik olarak konfüzyon, ajitasyon, uzamış küntlük, geçici parkinsonizm gibi tablolarla karakterizedir. Kalıcı hasar ise genellikle emboli sonucu gelişen lokalize iskemik enfarktlar sonucu oluşur ve klinik örneği hemiplejidir. Retrograd serebral perfüzyon uygulayan Coselli total arkus replasmanında mortalite oranını %6 olarak vermiştir.(19) Kazui, total arkus replasmanı yapılan 220 hastalık serisinde 5 yıllık hayatta kalma oranının %80 olduğunu ve bu oranın anevrizma etiyolojisine göre farklılık göstermediğini bildirmiştir.(8)

Total arkus replasmanı yapılan olgular diğer aort bölümlerinde diseksiyon veya dilatasyon içeriyorsa yıllık kontrastlı BT ile izlenmelidir. Diseksiyonu ve Marfan sendromu olan olgulara bir kontrendikasyon yoksa beta bloker verilmeli, hipertansif hastalarda kan basıncı iyi kontrol edilmelidir.

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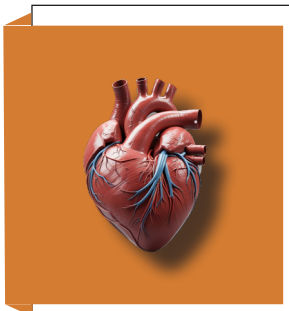

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ABDOMİNAL VE TORAKOABDOMİNAL AORT ANEVRİZMALARINDA CERRAHİ VE ENDOVASKÜLER GİRİŞİM

BÖLÜM 79

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Ancak bu tedavi stratejileri yüksek teknik uzmanlık gerektirdiği gibi, uzun vadeli başarı için düzenli takip ve tecrübeli merkezler şarttır. Hasta seçimi, cihaz planlaması ve postoperatif izlem multidisipliner ekiplerce yapılmalıdır.

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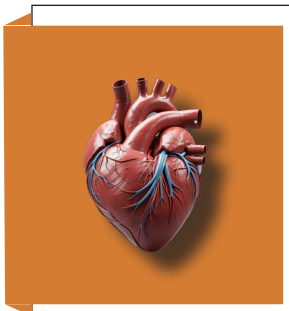

AORT DİSSEKSİYONLARI VE AKUT AORTİK SENDROMLAR

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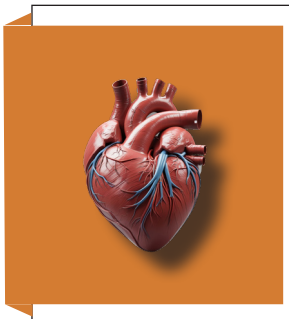

TORASİK AORT HASTALIKLARINDA ENDOVASKÜLER TEDAVİ

BÖLÜM
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talıkları veya stent greftlerin retrograd yerleştirilmesini engelleyen diğer faktörleri olan hastalar için antegrad yaklaşım uygulanabilir. Antegrad yol olarak aksiller arter, asendan aort veya doğrudan yerleştirme kullanılabilir. Antegrad erişimdeki başlıca komplikasyonlar felç, omurilik yaralanması, solunum yetmezliği ve böbrek yetmezliğidir (86).

Böbrek Yetmezliği

TEVAR aortik kros klemp veya kardiyopulmoner baypası önlese de, akut böbrek hasarı (ABH) hala yaygın bir komplikasyondur ve %1 ile %34 arasında değişmektedir (85).Geniş değişkenlik aralığı, böbrek yetmezliği için standart birtanım eksikliğinden kaynaklanmaktadır. Preoperatif hipertansiyon ve kronik böbrek yetmezliği gibi ABH riskini artıran hasta faktörlerinin yanı sıra, iyotlu kontrast kullanımının ABH'ye katkıda bulunan bir faktör olarak yaygın olarak kabul edilmektedir. Ameliyat öncesi hidrasyon ve N-asetilsistein uygulanması gibi önleyici stratejiler yaygın olarak kullanılmış ancak farklı sonuçlar elde edilmiştir (87).

Açık Cerrahi Onarıma Geçiş

TEVAR'dan açık torasik aort anevrizması onarımına geçiş gerektiren hastaların insidansının deneyimli merkezlerde %2,2 ila %7,2 olduğu bildirilmiştir (88). Retrograd Tip A diseksiyon, sekonder aortobronşiyal fistül, stent-greft enfeksiyonu, aortoözofageal fistül, anevrizma genişlemesi açık cerrahi onarıma geçilmesine yol açan temel nedenlerdir (77, 88). TEVAR'ın artan kullanımına rağmen klinisyenlerin açık onarıma hızlı dönüşüm gerektiren bu olaylar için dikkat ve hızlı karar verilmesi çok önemlidir.

Genel olarak özetlenecek olursa torasik aort hastalıklarında endovasküler tedavi, TEVAR, elektif torasik aort anevrizması onarımları için kısa işlem süresi, düşük parapleji oranı, hızlı iyileşme, kısa hospitalizasyon, cerrahi riski yüksek acil diseksiyon olgularında düşük morbidite ve mortalite oranları ile altın standart haline gelmesine ve belirgin avatajlara sahip iolmasına rağmen maliyet konusu henüz tartışmalıdır. Önümüzdeki yıllarda TEVAR'dan uzun vadeli takip verileriyle, klinisyenler ve mühendisler endovasküler teknolojiyi geliştirmeye devam edebilecek ve endovasküler teknikler için uygulamaları yeniden tanımlayabileceklerdir. Gelecekte, gelişmiş teknoloji ile sağlanacak daha iyi sonuçlar yanında olgu sayısı, gerçek anatomik özelliklerin kavranması, buna uygun greft tiplerinin çeşitlendirilmesi ve endikasyonlardaki kısıtlılıkların aşılması ile endovasküler tedavinin tüm akut diseksiyonlar, travmatik aort rüptürleri, anevrizma rüptürleri, arkus ve torakoabdominal anevrizmalar gibi kompleks patolojilerde de yaygın kullanımı mümkün olabilecektir.

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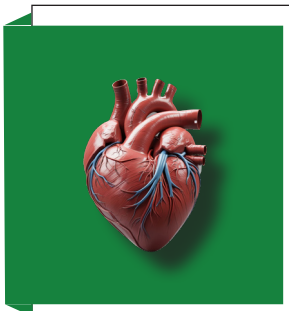

ATEROSKLEROTİK PERİFER ARTER HASTALIĞINDA MEDİKAL TEDAVİ

BÖLÜM
82

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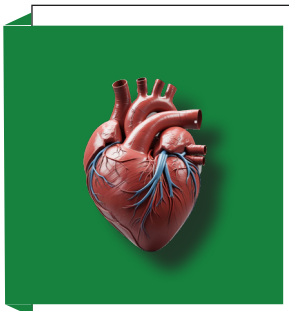

ATEROSKLEROTİK PERİFER ARTER HASTALIĞI CERRAHİ VE ENDOVASKÜLER TEDAVİSİ

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83

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yon sonuçları hakkında çok değerli sonuçlar vermiştir (68). Amerika Birleşik Devletleri ve Kanada'da 600'den fazla merkezde, 2003-2018 yılları arasında AK endikasyonuyla yapılan 34.944 işlem ve takip sonuçları analiz edilmiştir. Femoropopliteal (FP), infrapopliteal (İP) ve kombine işlemlerin bir yıllık yeniden girişim olmadan sağkalım oranları sırasıyla %89.2, %91.3 ve %85.3 olmuştur. Aşağıdaki grafikte, majör ve minör ampütasyon olmadan sağkalımın dizaltı işlemlerde belirgin olarak düşük olduğu görülmektedir (68).

Üst Ekstremitenin Revaskülarizasyonu

Toplam yedi klinik çalışmada yer alan 731 hastada uygulanan 760 girişimi inceleyen ayrıntılı bir metaanaliz subklaviyen arter darlığı için uygulanan açık cerrahi ve endovasküler tedavileri karşılaştırmıştır (69). Endovasküler işlem uygulanan grupta stentleme oranı %87 olurken cerrahi yapılan grupta şu işlemler uygulanmıştır: Baypas cerrahisi (karotis-subklaviyen, aksillo-aksiller, subklaviyo-subklaviyen) veya karotis-subklaviyen transpozisyon. Erken dönem sonuçları benzer olmakla beraber açık cerrahi grupta nöral komplikasyon oranı daha yüksek (%5.4'e karşın %0.2) bulunmuştur. Bir (%95'e karşın %89), üç (%91'e karşın %83) ve beş yıllık (%87'ye karşın %75) açıklık oranları değerlendirildiğinde açık cerrahi tedavinin endovasküler tedaviden çok üstün olduğu görülmüştür (69). İlginç bir şekilde, uzun dönem sağkalım ve şikâyetlerin yeniden ortaya çıkması açısından iki tedavi arasında fark bulunamamıştır. Literatürde benzer sonuçlar bildirildiği gibi endovasküler tedaviyle daha yüksek veya belirgin fark olmayan açıklık oranları bildiren çalışmalar mevcuttur (26).

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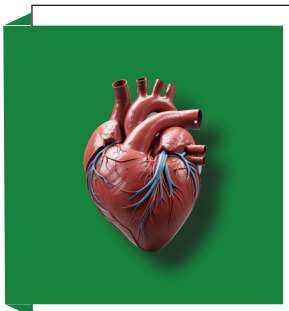

KAROTİD ARTER HASTALIKLARI VE CERRAHİ TEDAVİSİ

BÖLÜM
84

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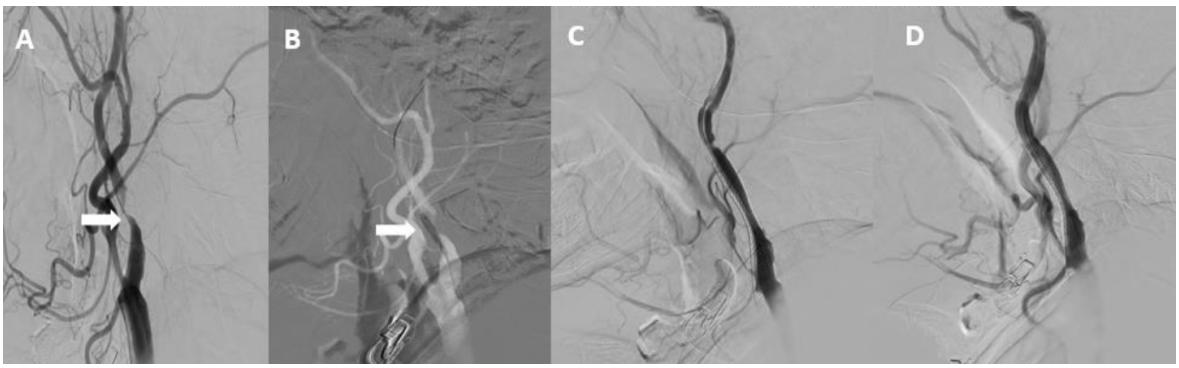
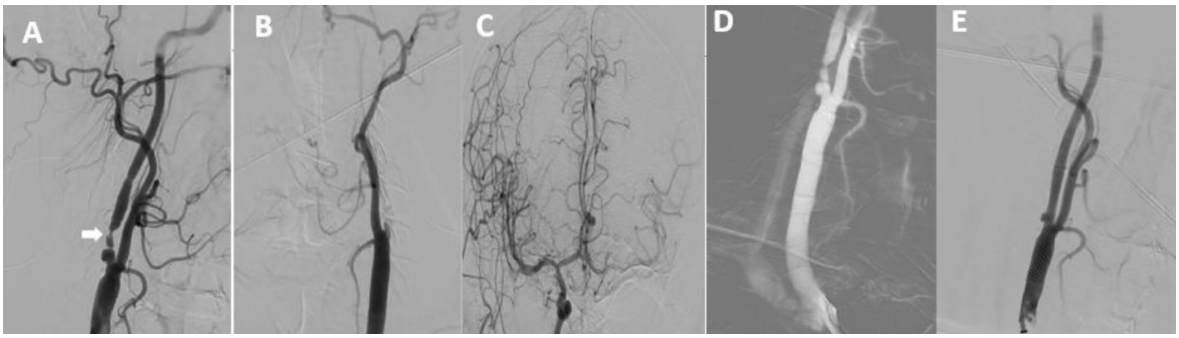


Şekil 2 *64 yaşında erkek hasta. 1 hafta önce sağ tarafta güçsüzlük ve konuşma bozukluğu. Şuanki muayenesi normal. A. Sol İKA bulbus distalinde %90 darlık. B. Predilatasyon anjioplasti. C. Stent yerleştirildikten sonra gelişen vazospazm için intraarteriyel vazodilatattör tedavi verildi. Ve ardından balon anjioplasti yapıldı. D. Lezyonda tama yakın açıklık sağlandı.*(Doç.Dr. Özlem Aykaç tarafından hazırlanmıştır)*



Şekil 3. *65 yaşında asemptomatik erkek hasta. A. Sağ İKA 'da bulbus seviyesinde %70, ülseratif plak B. Sol İKA oklüde izleniyor C. Sağ KKA'dan enjeksiyonla sol MCA kısmen dolum gösteriyor E. Sağ İKA darlığına stent ve balon anjioplasti ile endovasküler müdahale yapıldı.* (Doç.Dr. Özlem Aykaç tarafından hazırlanmıştır)*

nadir bir komplikasyonudur. %0,67 intraserebral kanamaya neden olabilir. İlk semptom genellikle başağrısıdır. Fokal nöbetler, intraserebral kanama izlenebilir. İşlem sırasında hipertansiyon sendromun önemli bir prediktörüdür. Bu nedenle, işlem sırasında yakın kan basıncı takibi önemlidir.

Vazospazm özellikle stentin açılması sonrası veya distal koruma cihazına bağlı gelişebilir. Nitrogliserin gibi intraarteriyel vazodilatörlerle tedavi edilebilir.

Diğer komplikasyonlar arasında myokard infarktüsü, böbrek yetmezliği, erişimle ilgili problemler (kanama, psödoanevrizma, distal ateroembolizasyon), stentin restenozu ve karotis stent kırığı yer almaktadır.

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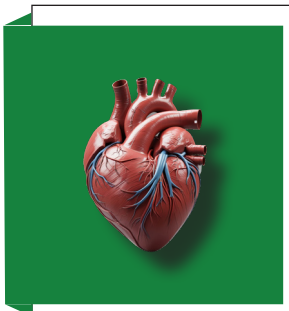

KRONİK VENÖZ YETMEZLİK

BÖLÜM
85

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düşük doz enerji uygulanır. Lazer enerjisi damar duvarında selektif fototermoliz yoluyla ısı üretir ve damar kasılmasını, kısmi kapanmayı tetikler. Bu, tedavi etkinliğini artırır ve damar yapısının bozulmasını sağlar.

4. **Skleroterapi (Ks):** Soğuk uygulama altındayken sklerozan madde enjekte edilir. Soğuk sayesinde enjeksiyon sırasında ağrı azalır ve damar spazmı desteklenerek skleroterapinin etkisi artırılır. Sklerozan madde damar endotelinde hasar oluşturarak damar kapanmasını sağlar.

Perforan ven yetersizliği

Perforan ven yetmezliği, bazı olgularda primer reflü odağı olarak rol oynayabilirken, birçok durumda derin venöz sistemdeki bozulmalar ve genel venöz fonksiyon kaybının sekonder sonucu olarak gelişmektedir. Perforan ven yetmezliği, reflü süresi 350 milisaniyenin üzerinde olan geniş perforan damarları tanımlamak için kullanılmaktadır. Klinik C3-C6 evresindeki hastalarda öncelikle yüzeyel venöz sistemdeki patolojiler ile varsa eşlik eden derin venöz yetmezlik değerlendirilip tedavi edilmelidir. Bu sistemlerin başarılı bir şekilde tedavi edilmesini takiben, perforan venlerdeki patolojik reflü sıklıkla gerileyebilir. Ancak, belirli hasta gruplarında şikayetlerin devam etmesi ya da venöz ülserlerin yeterli iyileşme göstermemesi durumunda, perforan venlere yönelik girişimsel tedavilerin planlanması uygun bir yaklaşımdır. American Venous Forum'un 2020 yılında yayımladığı kılavuza göre, C4-C6 evresindeki hastalarda yüksek reflü hızına sahip ve çapı artmış perforan venlerin varlığı durumunda, girişimsel tedavi önerilmektedir. C3 evresinde ise, ödemin diğer olası nedenleri dışlandıktan sonra perforanlara yönelik müdahale planlanmalıdır. Ancak semptomu olmayan bireylerde, genişlemiş perforan ven varlığı tek başına ablasyon endikasyonu oluşturmamaktadır (57).

Perforan Ven Ligasyonu: Açık cerrahi ile yapılan PV ligasyonu, endovenöz seçeneklerin bulunmadığı durumlarda tercih edilebilir. Cerrahi öncesinde ultrason ile perforan venlerin işaretlenmesi önemlidir. Alternatif olarak, subkutanöz tortiyöz perforan ven dallarına yönelik flebektomi uygulanabilir. Ancak bu yöntemin başarı oranlarına dair veriler sınırlıdır.

Perforan Ven Ablasyonu: Endovenöz yöntemler arasında EVLA, RFA, MOCA, CAC ve UGFS yer alır. Perforan venlerin tortiyöz yapısı ve üzerindeki ciltte ülser varlığı, direkt girişimi zorlaştırabilir. Bu nedenle, komşu varisli damarlar üzerinden dolaylı giriş tercih edilebilir. RFA ve EVLA ile sağlanan kapatma oranları PV'lerde %60–80 arasında değişirken, bu oran trunkal venlerde genellikle>%90'dır. Perforan venlerde zamanla rekürrens görülebileceğinden, erken dönemde DUS takibi ve gerekirse yeniden müdahale önerilmektedir (94).

Diğer Teknikler: Subfasyal endoskopik perforan ven cerrahisi, açık ligasyona minimal invaziv bir alternatiftir. Genel veya spinal anestezi gerektiren bu yöntemde, perforan venler subfasyal olarak diatermi veya klipsle kesilir. Kapatma oranı endovenöz yöntemlere göre daha yüksek bildirilmiştir, ancak doğrudan karşılaştırma yapan bir çalışma bulunmamaktadır. Komplikasyonlar genellikle minör olup; hematom, ağrı ve geçici sinir hasarı şeklindedir. Ciddi komplikasyonlar nadirdir (95).

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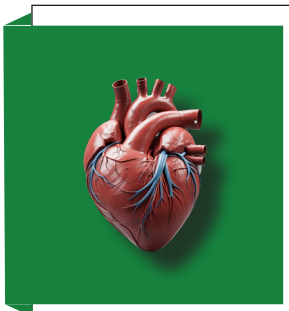

POST-TROMBOTİK SENDROM

BÖLÜM
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kullanımında yorgunluk, ağrı ve fonksiyonel kısıtlılık) ile üç klinik bulgu (çap farkıyla ölçülen şişlik, renk değişikliği, kollateral venler) içeren yeni bir skor önerilmiştir. Bu bulguların her biri 0–3 arası puanlanarak toplam skor belirlenmekte, ayrıca işlevsel yeti kaybını ölçen bir değerlendirme ile birlikte kullanılmaktadır. Bununla birlikte, UE-PTS tanısı esasen klinik bulgulara dayanmakta olup, görüntüleme yöntemlerinin (dupleks ultrasonografi, BT venografi) tanısal değeri konusunda fikir birliği bulunmamaktadır. Bu nedenle UE-PTS'nin tanısında standardize edilmiş görüntüleme kullanımına dair net öneriler geliştirilmemiştir (191).

Tedavi konusunda da belirsizlikler sürmektedir. Alt ekstremite PTS için önerilen kompresyon tedavisinin üst ekstremiteye uygulanabilirliği konusunda yeterli veri bulunmamaktadır. ÜEDVT sonrası PTS gelişimini önlemek amacıyla bazı kliniklerde mezoklaviküler bölgede balon anjiyoplasti veya stentleme uygulanmaktadır. Ancak, klavikula altı yerleşimli stentlerin kırılma riski, bu bölgede stent kullanımını sınırlamaktadır. Özellikle ilk kosta rezeksiyonu ile birlikte yapılan cerrahi girişimlerde başarı oranlarının yüksek olduğu bildirilmektedir (194). Bu nedenle, kronik ÜEDVT tedavisinde öncelikle balon anjiyoplasti tercih edilmeli, ancak dirençli lezyonlarda dikkatli seçilmiş vakalarda stentleme düşünülmelidir.

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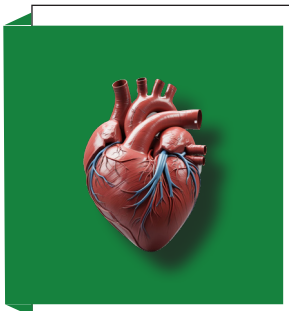

DERİN VEN TROMBOZU

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ve sayısında da artış göstermektedir. Pediatrik yaş grubundaki çocuklarda venöz tromboemboli gelişiminden sıklıkla SVK sorumlu tutulmaktadır (120). Yetişkinlerden farklı olarak antikoagülasyonun aPTT, anti-Xa düzeyleri gibi tetkiklerle pediatrik grupta takibi daha da önem kazanmaktadır. Pediatrik grupta rivaroksaban yapılan bazı çalışmalarda etkin bulunsa da NOAK'lar için pediatrik populasyonda yeterli çalışma bulunmamaktadır. Aynı şekilde tromboliz tedavisi için de yüz güldürücü sonuçlar izlenmiştir ancak çalışma sayısı bu tedavi seçeneği için de yetersizdir. Derin ven trombozuna sahip çocuklarda tedavi planlaması ve takibi bu konuda uzmanlaşmış klinisyenlerce yönetilmelidir.

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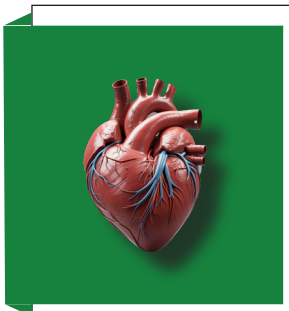

HEMODİYALİZ AMAÇLI DAMAR ERİŞİM YOLU OLARAK ARTERİOVENÖZ FİSTÜL CERRAHİSİ

BÖLÜM
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antekübitalde ulnar sinirin bası altında kaldığı kübital tünel sendromu veya el bileğinde median sinirin bası altında kaldığı karpal tünel sendromudur. Tuzak nöropatisi mononöropatidir. AVF oluşumu ve iskemiyle ilişkisi yoktur. Üremik veya diyabetik nöropati bilateral tutulum gösterir.

İskemik monomelik nöropati unilateral (monomelik), üç önkol sinirinin tutulumu ile karakterizedir. AVF girişiminden hemen sonra ortaya çıkar, nadiren gecikmiş şekilde görülür. Belirgin iskemi bulgusu görülmez. Ağrı, parestezi, hissizlik ve motor kayıp görülebilir. Selektif olarak vasa nervorum akımının azalması sorumlu tutulmaktadır. EEG ile ayırıcı tanı yapılır. AV fistülün iptali veya çalma sendromundaki gibi arteriyel inflow değiştirme teknikleri ve banding uygulanabilir. Ancak en kesin tedavi AV fistülün acil olarak kapatılmasıdır. AVF kapama ile hızlı düzelme görülür. Geç kalınan olgularda ve acil AVF kapama uygulanan bazı olgularda kalıcı hasar ve ekstremite malfonksiyonu raporlanmıştır (79-81).

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