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Bölüm 1

KÖK REZORPSİYONUNUN TANI VE TEDAVİSİNDE GÜNCEL YAKLAŞIMLAR

Zeynep Yağmur ÖZDEMİR TEKİN[1]
Arzu KAYA MUMCU[2]

GİRİŞ

Kök rezorpsiyonu, odontoklastik aktivite nedeniyle diş sert dokularının kaybı olarak tanımlanmaktadır(1). Primer dentisyonda rezorpsiyon fizyolojik bir süreç olarak kabul edilir ve süt dişlerinin eksfoliasyonuna yardımcı olur. Ancak daimi dentisyonda görülen rezorpsiyon patolojiktir ve istenmeyen bir durumdur(2). Rezorpsiyon sürecinin başlaması için gerekli olanlar; dokudaki doğal bariyerin yıkılması, sürekli bir stimülasyon ve klastik hücreler için canlı bir kan kaynağı olarak sıralanabilir. Dış doğal bariyerler periodontal ligament (PDL) ve sement iken iç doğal bariyerler odontoblastlar ve predentindir. Bu bariyerler klastik hücrelerin sementum ve dentinin mineralize olmamış matriksine tutunmasını ve rezorbe olmasını önler. Rezorpsiyon için uyarıcı faktörler kök kanal sisteminde bakteri varlığı, travmatik yaralanmalardan sonra PDL'nin nekrozu, gelişimsel kusurlar, komşu gömülü diş, komşu kist veya tümör benzeri patolojiler olabilir (3).

Kök rezorpsiyonu genellikle asemptomatiktir; bu nedenle radyografik inceleme ile tesadüfen ortaya çıkar. İlerleyen rezorpsiyon vakalarında ağrı, renklenme ve mobilite gibi klinik bulgular gözlenebilir. Kök rezorpsiyonuna yol açan nedenlerin ve risk faktörlerinin bilinmesi ve gerekli durumlarda düzenli radyografik kontrollerin yapılması, rezorpsiyonun erken evrede teşhis edilmesini ve ilerlemesinin önlenmesini mümkün kılar(4). Kök rezorpsiyonunun etiyolojisi hakkında birçok görüş bulunmaktadır. Dental travma, periodontal tedavi, ortodontik tedavi, intrakoronal beyazlatma, dentoalveolar cerrahi kök rezorpsiyonunu en sık uyaran faktörler arasında yer almaktadır(5).

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Bölüm 2

ISIL İŞLEM GÖRMÜŞ NİTİ EĞE SİSTEMLERİ

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GİRİŞ

Kök kanal preparasyonu, aseptik çalışma koşulları altında endodontik aletler ve irrigasyon solüsyonları ile gerçekleştirilmektedir. Geçtiğimiz yüzyılın son on yılına kadar paslanmaz çelikten üretilen aletler rutin olarak kullanılmaktaydı. Ancak paslanmaz çelik aletlerin rotasyon hareketiyle kullanılması bazı vakalarda komplikasyonlara yol açabilmektedir. Aynı zamanda, paslanmaz çelik aletler ile preparasyon hekimleri oldukça zorlamakta ve zaman açısından uzun sürmektedir (1). Bu nedenle nikel titanyum (NiTi) aletler yirmi yılı aşkın bir süre önce piyasaya sürülmüştür ve halen günümüzde endodontide popüler olarak kullanılmaya devam etmektedir (2).

NiTi endodontik aletler paslanmaz çelik aletlerle karşılaştırıldığında daha esnek ve kırılma direnci daha yüksek aletlerdir (2). NiTi aletlerle kök kanal preparasyonunun, paslanmaz çelik el aletlerine kıyasla önemli ölçüde daha az kanal transportasyonu ve daha az preparasyon hatası ile sonuçlandığı çeşitli çalışmalarda gösterilmiştir (3). İlk üretildikleri zamandan bu yana, alet tasarımı önemli ölçüde değişmiştir; alaşım işlemenin yanı sıra üretimde de ilerlemeler kaydedilmiştir. NiTi döner aletlerin hem kırılmaya karşı daha fazla direnç göstermesi hem de etkili bir şekilde preperasyonu için üreticiler aletler üzerinde bazı değişiklikler yapmaktadırlar (2).

NiTi alaşımının mekanik davranışı; mikroyapısal fazların oranları ve özellikleri tarafından belirlenmektedir. Isıl işlem (termal işlem), NiTi alaşımlarının geçiş sıcaklıklarını ayarlanması ve NiTi endodontik aletlerin yorulma direncini etkileme açısından önemlidir (4). Son yıllarda, NiTi alaşımlarının mikro yapısını

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termomekanik işlemi, klinik koşullar altında martensit veya R-fazının ortaya çıkmasına yol açan faz bileşiminde bir değişikliğe izin vermektedir. M-wire ve R-fazlı aletler östenitik bir durumu korurken, CM teli ile Gold ve Blue ısıl işlem görmüş aletler önemli miktarda martensitten oluşmaktadır. Martensit fazının artan miktarı nedeniyle, martensitik aletler döngüsel yorgunluğa karşı daha fazla direnç göstererek daha esnektir ve daha büyük bir dönme açısı ancak kırılma anında daha düşük tork ortaya çıkartmaktadır. Martensitik aletler ileri derecede eğriliğe sahip kök kanallarında veya çift eğriliğe sahip kök kanallarında tercih edilebilmektedir. Ayrıca, martensitik aletlere ön eğim verilebilmekte, bu da eğimli kök kanllarında ve basamak gibi komplikasyonların yönetilmesinde faydalı olabilmektedir. Zaman içerisinde birçok firma farklı eğe sistemleri tanıtmış ve piyasaya oldukça fazla sayıda eğe sistemi çıkartmışlarıdır. Bu eğelerin çeşitli avantaj ve dezavantajları mevcuttur. Endodonti geliştikçe yeni sistem ve üretim şekilleri ortaya çıkmaya devam edecek ve NiTi sistemlerinin gelişimi sürecektir. Hekimlerin başarılı endodontik vakalar yapabilmeleri için yeni çıkan sistemleri takip etmeleri ve uygun NiTi sistemlerini, özellikle ısıl işlem görmüş NiTi sistemlerinin vakaya özel olarak seçebilmeleri önemlidir.

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Bölüm 3

ENDODONTİK TEDAVİDE İLAÇ KULLANIMI

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GİRİŞ

Ağrı, tüm uzmanlık alanlarındaki doktorların en sık karşılaştıkları şikayettir (1). Uluslararası Ağrı Araştırmaları Derneği tarafından tanımlanan ağrı, "gerçek veya potansiyel doku hasarıyla ilişkili hoş olmayan duyusal ve duygusal bir deneyimdir". Ağrı, daha fazla zarardan korunmak için bir mekanizma görevi görür ve hastaların tıbbi yardım aramasının en önemli nedenlerindendir (2).

Odontojenik ağrı yaygın bir durumdur. Epidemiyolojik çalışmalar, dental ağrının nüfusun yaklaşık %12-14'ü tarafından bildirildiğini göstermektedir. Ağrı sistemi ve özellikleri konusundaki artan bilgi, odontojenik ağrının tanı ve tedavisinde klinik becerilerin geliştirilmesine katkıda bulunmaktadır (3).

Endodontik tedavi, kök kanal preparasyonu ve obtürasyonunun yanı sıra, etkili bir preoperatif, intraoperatif ve postoperatif ağrı kontrolünü de içerir. Ağrı kontrolü, hastalar için yaşam kalitelerini iyileştirdiği için çok önemlidir (4). Uygun ağrı kontrolü, tıbbi geçmişin alınması ve klinik ile radyolojik muayene yoluyla elde edilen doğru tanıya dayanır. Postoperatif ağrı, endodontik müdahaleyi takiben 24 saat içinde %40 oranında görülen yaygın bir durumdur ve günlerce sürebilir (4,5).

Endodontik ağrı tedavisi lokal veya sistemik olabilir. Diş hekimleri, ağrı yönetimi için sıklıkla analjezik reçeteler yazmaktadır. Her bir sistemik tedavi türünün etkinliği ve güvenliği, hastalara uygulanırken göz önünde bulundurulmalıdır (2).

Dental tedavilerde reçete edilen ilaçlar dünyada en çok tüketilen ilaç grupları arasındadır. Diş hekimliğinde analjezikler ve antibiyotikler en fazla tercih edilen ilaçlardır (6).

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Bölüm 4

ENDODONTİK TEDAVİDE AĞRININ ÖNEMİ VE POSTOPERATİF AĞRI KONTROLÜNDE UYGULANABİLECEK YÖNTEMLER

Şebnem DURUKAN[1]
Esma SARIÇAM[2]

1. AĞRI

Ağrı, algı ve bu algıya verilen tepki olmak üzere iki temel bileşeni olan psikobiyolojik bir durumdur. Bu bileşenler, hastadan hastaya farklılık gösterebilir. Kişinin duygusal durumu, ağrıyı algılama biçimini etkileyerek ağrının daha şiddetli hissedilmesine yol açabilir (1).

1.1. **Ağrının Tanımı**

Uluslararası Ağrı Araştırmaları Birliği'ne (IASP) göre ağrı, "var olan ya da potansiyel doku hasarı ile ilişkilendirilen veya bu şekilde tanımlanan, hoş olmayan duyusal ve duygusal bir deneyim" olarak tanımlanmaktadır (2). Ağrı, doku hasarının farkına varılması olarak tanımlanabileceği gibi, Merskey tarafından, mevcut ya da olası bir doku hasarıyla bağlantılı olarak ortaya çıkan, hoş olmayan duyusal ve duygusal bir durum olarak da açıklanmıştır. Ağrı, öznel bir algıdır çünkü daima kişiye özel bir duyumdur (3). Bu nedenle, ağrıyı değerlendirirken yalnızca fiziksel faktörler değil, aynı zamanda psikolojik unsurlar da göz önünde bulundurulmalıdır. Ağrıyı etkileyen ve bireylerin ağrılı uyaranlara verdikleri tepkinin şekillenmesini sağlayan çok sayıda etken bulunur. Bunlar arasında cinsiyet, din, dil, ırk, sosyo-kültürel faktörler ve korku gibi nedenler yer alır (4). Ağrı; aktivitelerin değişmesi, anksiyete, bulantı, korku, yüksek tansiyon, yüksek sesler, kusma ve taşikardi gibi çeşitli durumlarla kendini gösterebilir. Ayrıca, ağrının algılanma düzeyi zaman içinde değişkenlik gösterebilir ve farklı koşullar altında insanların ağrıya verdikleri tepkiler farklılık gösterebilir (5).

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Bölüm 5

ENDODONTİDE GÜNCEL ANTİBİYOTİK KULLANIMI

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Gülsen KİRAZ[2]

GİRİŞ

Endodontik enfeksiyonlar gram negatif, gram pozitif, zorunlu anaeroblar ve fakültatif anaerobları içeren polimikrobiyal enfeksiyonlardır (1). Bu enfeksiyonlar, periradüküler dokular ve pulpayla sınırlı kalabilmekte ya da bölgesel lenf nodlarına yayılım gösterebilmektedir. Bu enfeksiyonların elimine edilmesinde antibiyotik reçete edilmesi hekimler tarafından sıkça başvurulan bir tedavi metodudur. Ancak antibiyotiklerin % 50' si yanlış şekilde reçete edilmektedir ya da yanlış şekilde kullanılmaktadır (2). Hem genel diş hekimlerinin hem de endodontistlerin dental ağrısı bulunan hastalara rutin olarak antibiyotik reçete ettiğini gösteren çeşitli çalışmalar bulunmaktadır. Bu durum, bu vakalarda hastalara antibiyotik reçete edilmesinin tıbbi-hukuki açıdan uygun, haklı ve savunulabilir olup olmadığı sorusunu gündeme getirmektedir (3, 4). Avrupa Endodonti Derneği' ne göre, drenaj ve kök kanal tedavisi sayesinde lokal veya sistemik antibiyotiklere ihtiyaç duyulmadan vakalar başarılı bir şekilde yönetilebilmektedir. Ancak, sistemik tutulum ve lenf nodu enfeksiyonun hızlı ve yaygın yayılımı meydana geldiğinde, lokal tedaviye ek olarak antibiyotikler kullanılabilmektedir (1).

Sistemik etki eden enfeksiyon (ateş, halsizlik, selülit, lenfadenopati) gibi durumlarda, yeterli debridman ve cerrahi drenaja ek olarak antibiyotik kullanıldığında, klinisyen en dar spektrumlu antibiyotik kürünü kullanmalı, geniş spektrumlu antibiyotik kullanımını en aza indirilmeli ve hasta yakından takip edilmelidir (2). Sağlıklı bireylerde endodontik tedaviler sonucu oluşan bakteriyemiler hızla tedavi edilebilmekte ve herhangi bir komplikasyona neden olmamaktadır (5). Lokalize endodontik enfeksiyonlarda yeterli debridman ve drenajı takiben uygulanan ek antibiyotiklerin etkisiz olduğunu gösteren

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kullanılabilmektedir. Beta-laktam antibiyotikler (penisilin V ve amoksisilin) endodontik tedavi sırasında en sık tercih edilen antibiyotiklerdir.

Antibiyotikler temel ilaçlardır, ancak aşırı ve yanlış kullanımları hiçbir antibiyotiğe duyarlı olmayan dirençli bakteriler yaratmaktadır. Diş hekimleri birincil antibiyotiklerin yaklaşık %10' unu reçete ettiğinden dolayı, diş hekimliği mesleğinin antibiyotik dirençli bakterilerin gelişimine potansiyel katkısını hafife almamak önemlidir.

Uzun süre antibiyotik kullanılması sonucu bağırsak florasındaki değişim sonucu fırsatçı mikroorganizma *Clostridium difficile* klindamisin uzun süre kullanımı sonucu ortaya çıkmaktadır. Bu enfeksiyondan dolayı klindamisin güncel proflaksi tablosunda kendine yer bulamamaktadır.

Birçok antibiyotiğin lokal olarak uygulanmasının denenmesine rağmen hiçbirinden tam istenilen sonuç alınamamıştır. ESE' nin revitalizasyon prosedürleri hakkındaki pozisyon bildirisi, renk bozulmasını önlemek için antibiyotik yerine kalsiyum hidroksit kullanımını savunmaktadır.

Antibiyotik reçete edilirken, hastaya verilen kar-zarar dengesine dikkat edilerek uygun antibiyotik türü ve dozu seçilmesi konusunda klinisyenler dikkatli olmalıdır.

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Bölüm 6

PULPAYI ETKİLEYEN DENTAL ANOMALİLER

Mertkan KUMRU[1]
Ezgi Can ÇEKİÇ[2]

GİRİŞ

Kök ve kök kanal sistemlerinin karmaşıklığının anlaşılması, başarılı bir kök kanal tedavisi için temel bir gerekliliktir(1). Kök kanalları ile aksesuar kanal morfolojilerini sınıflandırmak amacıyla çeşitli sistemler geliştirilmiştir(2-6). Bir dişin gelişimi, epitelyal-mezenkimal etkileşimler tarafından yönlendirilen karmaşık bir biyolojik süreçtir. Bu etkileşimlerde meydana gelen bozulmalar, normal odontogenezin değişmesine neden olarak gelişimsel anomalilere yol açabilir. Diş gelişiminin farklı aşamalarında, kök ve kanal sayısı, boyutu ve şekli ile ilgili çeşitli anomaliler ortaya çıkabilir(7).

DENS İNVAGİNATUS

Dens invaginatus veya dens in dente, radyografik olarak bir dişin içinde başka bir diş varmış gibi görünen gelişimsel bir malformasyondur(8). Dens invaginatusun etiyolojisi tartışmalı olmakla birlikte, oluşumunu açıklamaya yönelik çeşitli teoriler öne sürülmüştür(8, 9). Bununla birlikte, odontogenez sırasında kalsifikasyon gerçekleşmeden önce mine organının diş papillasına doğru invagine olması, en yaygın kabul gören mekanizmalardan biridir (8). Travma, enfeksiyon gibi dış etkenlerin yanı sıra genetik faktörler de dens invaginatus gelişiminde rol oynayabilir, ancak, genetik etiyolojiye ilişkin mevcut çalışmalar sınırlıdır. Dens invaginatus, sıklıkla pulpa ve periradiküler hastalıklarla ilişkili olup, etkilenen dişin korunması ve tedavisi için genellikle endodontik müdahale gerektirir. Değişken ve anormal anatomik yapı nedeniyle endodontik tedavi süreci önemli zorluklar içermektedir(10-13).

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- Ledge oluşumu,
- Tıkanmalar ve alet kırılması,
- Apikal sızdırmazlığın bozulması,
- Yetersiz dezenfeksiyon nedeniyle başarısız tedavi sonuçları(61).

Bu tür morfolojik zorlukların yönetimi için ayrıntılı anatomik bilgi ve ileri görüntüleme teknikleri gereklidir. Konik ışınlı bilgisayarlı tomografi (CBCT) kullanımı, kök kanal anatomisinin detaylı bir şekilde değerlendirilmesini sağlar. Ayrıca, ısı ile işlenmiş nikel-titanyum döner eğelerin kullanımı, kök kanallarının daha güvenli ve etkili bir şekilde şekillendirilmesine katkıda bulunabilir(62).

Gelişimsel diş anomalileri, diş morfolojisi ve kök kanal anatomisinde önemli farklılıklara yol açarak teşhis ve tedavi süreçlerini karmaşık hale getirebilir. Geminsasyon, füzyon, taurodontizm, dens invaginatus, dens evaginatus, palatogingival oluk, kök dilaserasyonu ve süpernümerer kökler gibi anomaliler, endodontik ve periodontal tedavi yaklaşımlarını doğrudan etkileyen faktörlerdir. Bu anomalilerin başarılı bir şekilde yönetimi, detaylı radyografik değerlendirme, konik ışınlı bilgisayarlı tomografi (CBCT) kullanımı ve ileri endodontik tekniklerin uygulanmasını gerektirir. Kök kanal sistemindeki karmaşıklıklar nedeniyle, ısı ile işlenmiş nikel-titanyum döner eğeler, dental mikroskop ve hassas cerrahi prosedürler tedavi başarısını artırmada kritik rol oynar. Anomalinin tipi ve şiddetine bağlı olarak, preventif dolgulardan cerrahi rezeksiyonlara kadar geniş bir tedavi yelpazesi uygulanabilir. Doğru teşhis ve bireyselleştirilmiş tedavi planlaması, uzun vadeli başarılı klinik sonuçlar elde etmek için gereklidir.

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Bölüm 7

GEBE HASTALARDA ENDODONTİK TEDAVİ

Deniz KARAOSMANOĞLU AKIN[1]

GİRİŞ

Gebelik süreci ile ilişkili olan oral patolojiler bir halk sağlığı sorunu olarak ele alınmaktadır (1,2). Gebelikte pek çok fizyolojik değişiklik meydana gelir. Bu fizyolojik değişiklikler dental patolojilere zemin hazırlayabilmektedir (3-6). Birçok çalışmada gebe kadınlardaki tedavi edilmemiş diş çürüğü oranı gebe olmayanlara kıyasla daha yüksek tespit edilmiştir (7-9). Buna gebelikteki hormonal, immünolojik, davranışsal ve diyetsel değişikliklerin yol açtığı ifade edilmektedir (5). Kusma, ağız içi asiditesinde artış, tükürük üretiminde azalma, karyojenik diyet, kötü ağız hijyeni, mide kapasitesinin azalması nedeniyle beslenme sıklığında artış gibi durumlar bunlara örnek verilebilir (3,6,10). Gebelikte östrojen ve progesteron seviyesinin artışı ile vasküler geçirgenlikte artış ve konak immün yanıtının azalması; bakteriyel, fiziksel ve kimyasal etkenlere tepki olarak oral inflamasyona eğilimi ve inflamasyonun şiddetini arttırmaktadır (5). Bu değişikliklerin ağrılı pulpa semptomlarına yatkınlık yaratabileceği gösterilmiştir (10).

Gebelik, endodontik tedaviyi ertelemek için tek başına bir neden değildir ancak tedavi içeriğinin ve zamanlamasının gebeliğe uygun şekilde düzenlenmesi gerekmektedir (11,12). Gebelikte meydana gelen değişimler ve fetüsün uygulanan tedaviden etkilenme riski göz önünde bulundurulmalıdır (3,4). Gebe hastalar için endodontik tedavi, hastalığı kontrol altına almayı, sağlıklı bir ağız ortamını korumayı ve hamileliğin ilerleyen evrelerinde veya doğum sonrası dönemde ortaya çıkabilecek olası komplikasyonları önlemeyi amaçlamaktadır (11). Endodontik tedaviler genellikle radyografi, lokal anestezi uygulaması, kanal içi ilaç uygulaması, irrigasyon, analjezik ve antibiyotik reçete edilmesi gibi basamaklara sahiptir. Her aşamada uygulanacak işlemin gebelik ile uyumlu olması gerekmektedir (4,11).

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pratiğinde gebe hastalarda radyografik tetkikler yalnızca gerekli durumlarda ve gerekli olan sayıda görüntü alınarak gerçekleştirilmelidir. Mümkünse dijital radyografi yapılmalı ve kurşun koruma gibi önlemlere tam uyulmalıdır (14).

Gebeliğin beraberinde getirdiği özel durumlar endodontik tedavinin her aşamasının özel olarak planlanmasını gerektirmektedir. Kök kanal preparasyonunda mekanik enstrümantasyonun kullanımı ile elektronik apeks bulucunun kullanımı maruz kalınan radyasyon dozunu azaltır. Ayrıca tek kon tekniği gibi tekniklerin tercih edilmesi endodontik tedavinin daha kısa sürede gerçekleştirilmesini sağlar (14).

Kök kanal tedavisinde kullanılan hipoklorit ve kök kanal dolgu materyallerinin fetüse olumsuz etkisi olduğuna dair veri bulunmamaktadır (22). Sodyum hipoklorit, klorheksidin glukonat ve tuzlu su gibi kök kanal irrigantlarının uygun izolasyon sistemiyle kullanımı gebelikte tamamen güvenli olduğu ifade edilmektedir (11).

SONUÇ

Gebelik, endodontik tedaviyi ertelemek için tek başına bir neden değildir ancak tedavi içeriğinin ve zamanlamasının gebeliğe uygun şekilde düzenlenmesi gerekmektedir. Elektif işlemler mümkünse gebelik sonrasına ertelenmeli, acil işlemler olası komplikasyonların önüne geçmek için uygun şekilde gerçekleştirilmelidir. Diğer tüm tıbbi işlemlerde olduğu gibi endodontik tedavilerde de gebe hastalara yapılacak işlemlerde daima kar-zarar dengesinin gözetilmesi gerekmektedir. Hasta yapılacak işlemin her basamağı hakkında gebelik sürecine ve fetüse olası etkileri hakkında bilgilendirilmeli ve aydınlatılmış onam alınmalıdır. Bu kitap bölümünün yazımında konu ile ilgili mevcut literatür baz alınmıştır. Gebe hastaya yapılacak işlemlerde en güncel bilgilere göre hareket edilmesi önerilmektedir. Reçete edilecek ilaçlarda gebelik kategorisi ile birlikte bildirilen bütün yan etkilerin de göz önünde bulundurulması gerekmekte ve hasta tüm bu olasılıklar hakkında bilgilendirilmelidir.

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Bölüm 8

ENDODONTİK TEDAVİLERDE AĞRININ MEKANİZMASI VE ANALJEZİKLERİN ROLÜ

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1. GİRİŞ

Ağrı, Uluslararası Ağrı Araştırmaları Birliği (International Association for the Study of Pain-IASP) tarafından "gerçek veya potansiyel doku hasarıyla ilişkili veya böyle bir hasarla açıklanabilen hoş olmayan duyusal ve duygusal bir deneyim" olarak tanımlanmaktadır (1, 2).

Hastalar birçok nedenle diş hekimine başvurur. Bunlar arasında ağrı varlığı en yaygın nedenlerinden biridir. Diş hekimleri ağrıyı yönetmek için '3-D' prensibini kullanmalıdır ve doğru sırayla takip etmelidir (3, 4): (1) teşhis (diagnosis) ; (2) diş tedavisi (dental treatment) ve (3) ilaçlar (drugs). Ağrıyı yönetmek için ilk yapılması gereken, ağrı oluşumuna sebep olan hastalığı veya durumu teşhis etmek ve nedenini belirlemektir (3). Teşhisten sonra uygun tedavi yapılması semptomların giderilmesini sağlayacaktır. Ağrı tedavisinde ilaç kullanımı gerekli durumlarla sınırlandırılmalı ve ilaçlar sadece uygulanan endodontik tedaviye ek olarak kullanılmalıdır (3).

Analjezik gerektiren ağrılı durumların çoğu ağız, diş veya ilişkili dokulardan birinin inflamasyonundan kaynaklanır. Bu inflamasyon enfeksiyon, travma ve postoperatif prosedürler sonucu olabilir (3). Endodontik ağrı yönetimi, etkili bir endodontik tedavi ile uygun analjeziklerin kombinasyonunu içermektedir (5). Akut ağrıyı gidermek kullanılan ilaçların büyük bir kısmını non-narkotik analjezikler (asitaminofen [parasetamol] ve non-steroid antiinflamatuar ilaçlar) ile narkotik analjezikler (opioidler) oluşturur (3, 5). Diş hekimliğinde en yaygın kullanılan non-narkotik analjezikler aspirin, ibuprofen ve parasetamoldür ve hepsi 'reçetesiz' ilaçlar olarak sınıflandırılır (3).

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inhibisyonu yapmasına rağmen böbrek yetmezliği için risk faktörleri bulunan hastalarda güvenli olduğu kabul edilmektedir (114). Parasetamolün böbrek açısından güvenli olduğu, kalp yetmezliği nedeni ile hastaneye yatış riskinde artış olmadığı ve 4-5. derece böbrek hastalığı olanlarda böbrek fonksiyonlarında kötüleşme olmadığı gösterilmiştir (125, 126). Parasetamolün miyokard enfarktüsü üzerindeki etkileri için yapılan çalışmalarda güvenli olduğu tespit edilmiştir (127).

Parasetamol gastrointestinal sistemden hızla emilir ancak oral uygulamadan sonra sistemik dolaşıma tam olarak geçemez ve ilk geçiş metabolizmasına uğrar (128-130). Yoğun bir şekilde karaciğerde metabolize edilir ve terapötik dozun yalnızca %2-5'i idrarla değişmeden atılır.

6. AĞRI ŞİDDETİNE UYGUN ANALJEZİK KOMBİNASYONLARI

Ağrı şiddetine göre çeşitli analjezikler kombine olarak kullanılmaktadır. Orta dereceden şiddetliye kadar değişen ağrılarda parasetamol ile kombine halde NSAİİ'ler ve opioidler kullanılabilir. Odontojenik ağrılarda daha fazla rahatlama sağlamak için NSAİİ'ler parasetamolle kombine edilmektedir (86).

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Bölüm 9

CERRAHİ OLMAYAN RETREATMENT BAŞARISINDA ETKİLİ FAKTÖRLER

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1. GİRİŞ

Günümüzde kök kanal tedavilerindeki başarı oranı %90'ın üzerindedir, ancak bazı durumlarda ideal şartlar altında gerçekleştirilmiş kök kanal tedavilerinde bile başarısızlıkla karşılaşılabilmektedir (1, 2). Kök kanal tedavisi başarısızlıkla sonuçlandığında tekrar tedavi seçeneği olarak kanal tedavisinin yenilenmesi, periradiküler cerrahi veya ilgili dişin çekimi düşünülebilir. Bu tedavi seçenekleri arasından mevcut kök kanal tedavisinin yenilenmesi, bireylerin kendi dişlerini mümkün olan en uzun süre boyunca kullanma isteği ve en konservatif yöntem olması sebebiyle tercih edilme önceliğine sahiptir (3, 4). Buna ek olarak cerrahi retreatment işlemi yüksek başarı oranına sahip olsa da mikrobiyal enfeksiyonu kontrol altına alabilmek için de ortograt retreatment işlemi öncelikli olarak tercih edilmektedir (5).

Yeniden kök kanal tedavisi prosedürü, mevcut kök kanal dolgusunun uzaklaştırılmasını, enfeksiyonun olduğu apikal foramen bölgesine ulaşılmasını, kök kanal dezenfeksiyonunun sağlanmasını, kök kanalının yeniden şekillendirilmesini ve sızdırmaz bir şekilde doldurulmasını içermektedir(6, 7). Mevcut kök kanal dolgusunun kök kanal sisteminden tamamıyla ve güvenli bir şekilde uzaklaştırılması ilk hedeftir (8). Bu sebeple yeniden kanal tedavisi olgularında başarısızlık nedenleri doğru saptanmalı, mevcut problemin çözümlenebileceğine karar verilmeli ve her vaka kendi içerisinde değerlendirilerek tedaviye geçilmelidir (9, 10).

Yapılan bir çalışmada yeniden kanal tedavisi sonucu başarılı iyileşme oranlarındaki anlamlı farklılıklar dört değişkenle ilişkilendirilmiştir. Daha genç

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Bölüm 10

ENDODONTİDE NANOTEKNOLOJİ

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GİRİŞ

Nanoyapılar, atom seviyesinde üç boyutlu uzayın alanı olan nanoölçek aralığında (1–100 nm) en az bir boyuta sahip nesneler olarak tanımlanmaktadır. Yüksek yüzey-hacim oranları ve yüksek basınç ve eğilme mukavemeti gibi ayırt edici özellikleri, bilim insanlarını bu malzemelerin kullanımından faydalanabilecek çeşitli uygulama yöntemleri ve potansiyel endüstrileri araştırmaya teşvik etmiştir. Aktif olarak, nanoteknolojinin tüm tıbbi disiplinlerde kullanımında kayda değer bir ilerleme vardır. Nanoteknoloji, tıbbi uygulamalarda geniş bir yelpazede kullanılır; çeşitli hastalıkların tespit ve tanımlanmasında nanopartiküllerin belirteç olarak kullanımı, kanser tedavisinde hedefe yönelik ilaç iletimi, gen terapisi için DNA veya RNA nanovektörlerinin geliştirilmesi ve enfeksiyonların tedavisinde antibiyotiklerin salınımını veya moleküllerin antibakteriyel etkisini optimize etme gibi alanlarda önemli katkılar sunar (1).

Nanoteknolojinin kullanımıyla beraber birçok açıdan daha etkili tedavi uygulanabilmektedir. Hedefli ilaç iletim sistemi, sistemik yan etkileri azaltırken, ilacın etki noktasında daha yüksek konsantrasyonlarının elde edilmesini sağlar. Nanoteknolojinin rejeneratif tıptaki önemli rolü, iyileşme süresinde de önemli bir hızlanmaya olanak tanır. Birçok yeni malzemenin yüksek biyouyumluluğu, hızlandırılmış doku yeniden yapılandırma sürecini kolaylaştırır. Bu faktörler toplu olarak, kesin olarak teşhis edilmiş hasta ihtiyaçlarına dayalı kişiselleştirilmiş tedavinin geliştirilmesine katkıda bulunur.

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SONUÇ

Nanopartiküller, biyolojik sistemlerle etkileşim kurabilen ve istenilen etkiyi daha etkin bir şekilde gösterebilen malzemeler olarak öne çıkmaktadır. Olumlu özelliklerinin yanında nanopartiküllerin uzun vadeli etkileri hala tam olarak anlaşılamamıştır. Vücutta birikme potansiyeli ve toksisite riski, özellikle yüksek dozlarda kullanıldığında endişe verici olabilir. Nanopartiküllerin üretimi genellikle karmaşık ve maliyetli süreçler gerektirebilir. Bu durum, onların geniş bir şekilde ticari olarak erişilebilir olmasını zorlaştırabilir. Nanoteknolojinin dental uygulamalara entegrasyonu, çoğu zaman mevcut tedavi protokollerinin yeniden değerlendirilmesi ve adaptasyonunu gerektirir. Bu durum, diş hekimleri için eğitim ve uygulama zorluğu yaratabilir.

Diş hekimliği alanında da nanotıp uygulamaları giderek yaygınlaşmakta, nanopartiküller, dental materyallerin özelliklerini iyileştirerek tedavi süreçlerini dönüştürmektedir. Nanopartiküllerin kullanımı, dental implantlar, kompozit restorasyonlar ve kök kanal tedavisi gibi alanlarda, mekanik dayanıklılık, biyouyumluluk ve antibakteriyel özelliklerin artırılmasına yardımcı olmaktadır. Bu durum, hem hastaların tedaviye yanıtını olumlu yönde etkilerken hem de tedavi sürelerini kısaltmakta ve genel hasta memnuniyetini artırmaktadır.

Nanomalzemeler, biyofilm oluşumunu azaltma, demineralizasyon sürecini engelleyerek diş yapısının remineralizasyonunu artırma ve çürüklerle ilişkili ve endodontik mikroorganizmalara karşı koyma konusunda büyük bir umut vaat etmektedir. Bu sonuçlar, nanoteknoloji tabanlı malzemelerin terapötik değerinin doğrulanmasına olanak tanıyacak daha fazla klinik çalışmanın kapılarını açacak kadar ilham verici olmuştur.

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Bölüm 11

BAŞ-BOYUN BÖLGESİNE UYGULANAN RADYOTERAPİ VE ENDODONTİ

Deniz KARAOSMANOĞLU AKIN[1]

GİRİŞ

Baş-boyun bölgesi kanserlerinde primer tedavi amacıyla ya da cerrahi tedavi ile kombine olarak radyoterapi kullanılabilmektedir (1-3). Baş-boyun bölgesine uygulanan radyoterapi tükürük bezleri, oral mukoza ile kas, kemik ve dişler üzerinde çeşitli komplikasyonlara neden olabilir (2-5). Mukozit, kserostomi, disfaji, trismus, osteoradyonekroz bunlardan bazılarıdır (1-3). Tükürük miktarında azalmanın yanı sıra tükürük içeriği de radyoterapi alan hastalarda değişebilmektedir (5). Ayrıca baş-boyun bölgesine radyoterapi alan hastalarda diş çürüğü, eksik diş ve dolgulu diş oranının da yüksek olduğu bildirilmiştir (6-8). Mine ve dentin yapısında değişiklikler, dentin sertliğinde azalma, mine dentin bağlantısında zayıflama, minenin asit çözünürlüğünde artma radyoterapiye sekonder gelişebilmektedir (5). Önemli komplikasyonlardan birisi olan osteoradyonekroz riski nedeniyle bu hastalarda diş çekimi önerilmemektedir (5). Ek olarak radyoterapinin pulpa üzerindeki olumsuz etkileri nedeniyle de bu hastalarda endodontik tedavi ihtiyacının artmış olduğu söylenebilir (5,7). Ancak radyoterapi alan hastalarda endodontik tedavi bazı özel durumlar içerir (7). Bu yazıda güncel literatür eşliğinde, baş-boyun bölgesine uygulanan radyoterapinin endodonti açısından etkilerinin ele alınması hedeflenmiştir.

RADYOTERAPİNİN PULPA ÜZERİNDEKİ ETKİLERİ

Baş-boyun bölgesine uygulanan radyoterapinin pulpada nöral ve vasküler değişimlere yol açarak nekroz ile sonuçlanabileceği tespit edilmiş olmasına rağmen bu konuda fikir birliği bulunmamaktadır (2,9,10). Weissheimer ve ark.'ın (2) bu konudaki meta-analizinde soğuk duyarlılık testlerine ve elektriksel testlere verilen pulpa yanıtlarında, radyoterapi sonrasında negatif yanıt oranının arttığı

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kaybı yaşayacaklardır (26,31). Kırıkların önlenmesi için kök kanal dolgusunda güçlendirme kapasitesine sahip malzemeler tercih edilmelidir (26).

SONUÇ

Radyoterapi, baş-boyun bölgesi kanserlerinin tedavisinde sık kullanılan tedavi metotlarındandır. Tedavi edici etkisinin yanı sıra baş-boyun bölgesinde pek çok komplikasyona da yol açabilmektedir. Radyoterapi alan hastalarda endodontik tedavi ihtiyacının arttığı gösterilmiştir. Osteoradyonekroz gibi komplikasyonların önlenmesi için radyoterapi alacak hastalar dental değerlendirmeye tabi tutulmalı ve düzenli kontrol edilmelidirler. Radyoterapi alacak ya da almış hastalarda kök kanal tedavisi gerçekleştirilirken uygun metot ve malzemelerin tercih edilmesi önerilmektedir.

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Bölüm 12

VİTAL PULPA TEDAVİLERİNDE ÖNGÖRÜLEBİLİR SONUÇLAR İÇİN KLİNİK PROTOKOLLER

Burcu REVİ[1]
Edanur MARAŞ[2]

1. GİRİŞ

Diş pulpası, mikrobiyal açıdan zengin olan ağız ortamından koruyan ve güçlü mekanik destek sağlayan mine, dentin ve sementten oluşan sert doku katmanlarının içerisinde bulunur. Ancak, pulpayı koruyan bu sert dokuların bütünlüğünün kaybedilmesine yol açabilen çürükler, çatlaklar, kırıklar ve uyumsuz restorasyon kenarları, mikroorganizma ve toksinlerinin pulpaya ulaşmasına neden olurlar (1).

Diş pulpasının 3 temel işlevi vardır: İçinde bulunduğu sert dokuları etkiler ve onarır; ağrılı hislere yol açan nörojenik enflamasyon ile yaralanmaya yanıt verir; hücresel bileşenlerin canlılığını, metabolik gereksinimleri için yeterli oksijen ve besin sağlayarak korur (2). Pulpa vitalitesinin korunamaması; apikal periodontitis, periodontal dokularda hasar ve diş kaybı gibi sorunlara yol açabilir (3).

Vital pulpa tedavileri, diş pulpasının bir kısmının veya tamamının sağlığını korumayı amaçlar ve minimal invaziv tedavi prensibine dayanır. İndirekt pulpa kuafajı, direkt pulpa kuafajı, parsiyel/kısmi pulpotomi ve total/tam pulpotomi günümüzde uygulanan vital pulpa tedavisi prosedürleridir. İndirekt pulpa kuafajı, pulpaya yakın derin çürük lezyonu olan; ancak, pulpa dejenerasyonuna dair belirti veya semptomları olmayan dişlerde gerçekleştirilen bir tedavi olarak tanımlanabilir (4). Bu prosedürde remineralize edilemeyen çürük dokuları tamamen uzaklaştırılır, pulpa etrafında kalan etkilenmiş dentin bırakılır ve üzeri sızdırmazlık sağlayacak biyouyumlu bir materyalle örtülür (5). İndirekt pulpa kuafajında, pulpa etrafında çok ince bir dentin tabakası kaldığı için dentin tübülleri yoluyla pulpanın geri dönüşümsüz olarak etkilenme riski bulunur (6). Bu nedenle, pulpaya yakın dentin iyice dezenfekte edilmeli ve tersiyer dentin

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rezorpsiyonu ve apikal periodontitis gibi patolojik belirtiler gözlenmemelidir (161).

SONUÇ

Vital pulpa tedavileri, güncel diş hekimliğinde diş yapısının korunması için önemli tedavi yaklaşımları olarak kabul edilirler. Bu tedavilerde daha öngörülebilir sonuçların elde edilebilmesi için tedaviler güncel kanıta dayalı klinik protokollere uygun olarak gerçekleştirilmelidir. Bu nedenle, vital pulpa tedavilerinin başarısına etki eden faktörleri belirlemek amacıyla birçok çalışma yapılmıştır. Doğru teşhis, tedavi planlaması, hastanın yaşı ve cinsiyeti, çürük derinliği, pulpa kaplama materyalinin seçimi, final restorasyonun zamanı ve takip prosedürlerinin tedavi başarısı üzerinde önemli etkileri olabileceği düşünülmektedir. Ancak, bu faktörlerin tamamının prognoz üzerine olan olası etkileri literatürde belirsizliğini korumaktadır. Bu faktörlerin vital pulpa tedavilerinin prognozuna olan etkilerinin aydınlatılması ve bu bilgiler ışığında güncel tedavi protokollerinin oluşturulması vital pulpa tedavilerinin başarısını arttıracaktır.

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Bölüm 13

ENDODONTİDE 3 BOYUTLU REHBERLERİN KULLANIMI

Münevver KAYA[1]
Nihan ÇELİK UZUN[2]

1. GİRİŞ

3 boyutlu baskı, eklemeli üretim olarak da bilinen ileri düzey bir üretim teknolojisidir (1). Bilgisayar destekli tasarım (CAD) dijital modellerine dayanarak, standartlaştırılmış malzemeler kullanarak belirli otomatik süreçler aracılığıyla kişiselleştirilmiş 3 boyutlu nesneler oluşturur (2). Hızlı prototipleme için kullanılmakta olup, yaklaşık 30 yıldır endüstri, tasarım, mühendislik, tıp, diş hekimliği ve üretim alanlarında yaygın şekilde uygulanmaktadır (3).

3 boyutlu rehberler ilk defa Charles Hull tarafından 1986 yılında tanıtıldı ve bununla ilgili pek çok üretim teknolojisi geliştirildi (4). Tıp alanında özellikle travmatoloji, kardiyoloji, nöroşirürji, plastik cerrahi ve kraniyomaksillofasiyal cerrahi gibi dallarda geliştirilen 3 boyutlu rehberler, genellikle cerrahi planlamada, dijital görüntülemede, özel cerrahi cihazların tasarımı ve hasta-hekim iletişimi gibi alanlarda sıklıkla kullanılmaktadır (5). Bunların yanı sıra, diş hekimliğinde de protez, ağız, diş ve çene cerrahisi, oral implantoloji, ortodonti, endodonti ve periodontoloji gibi çeşitli klinik bilimler dallarında da 3 boyutlu rehberlerden yararlanılmaktadır (6,7).

1.1. Endodontide 3 Boyutlu Rehberlerin Kullanım Alanları

Rehberli endodonti tekniği ilk olarak, Krastl ve ark. tarafından, kök kanal tedavisi gerektiren pulpa kanalı kalsifikasyonu olan dişler için tanımlanmış ve uygulanmıştır (8). Şu ana kadar, endodonti alanında tedavi, eğitim ve araştırma gibi çeşitli alanlarda 3 boyutlu rehberlerden yararlanılmıştır (9). Bunlar arasında, endodontide giriş kavitesinin hazırlanması, mikrocerrahi, eğitim, öğretim ve

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