

## PARATİROİD HORMON VE OSTEOPOROZ

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### Giriş

Paratiroid bezden salgılanan paratiroid hormon (PTH) 84 aminoasitli bir polipeptit hormondur. Hem kalsiyum homeostazında, hem de kemik yeniden yapılanmasında rol oynar. PTH kalsiyum düzeylerini normal tutmak için etkilerini başlıca üç mekanizma ile gerçekleştirir: gastrointestinal sistemden kalsiyum emilimi, böbrekten kalsiyum ve fosfat geri emilimi ve kemikten osteoklastik rezorpsiyon. PTH bu etkilerini 1-34 N-terminal fragmanı sayesinde gerçekleştirir(1). Hiperparatiroidizmde sürekli yüksek PTH düzeyleri nedeniyle hiperkalsemi ve osteoporoz gelişirken, düşük doz aralıklı PTH veya fragmanları osteoanabolik etki gösterir. PTH osteoanabolik etkisini osteoblastların apoptozunu önleyerek ve osteoblast sayı ve fonksiyonlarını artırarak yapar(2). Rekombinant insan PTH'sının aralıklı kullanımının kemik yapımını yıkımından daha fazla artırdığının gösterilmesi osteoporoz tedavisinde kullanımını sağlamıştır(3).

### PTH Fizyolojisi

PTH bazı genlerin ekspresyonlarını değiştirerek hem direk, hem indirek yollarla biyolojik etkilerini gösterir. Protein kinaz C ve c-fos sinyal yolları aracılığıyla osteoblast ve osteoklastların proliferasyon ve diferansiyasyonunu stimüle eder, insülin benzeri büyüme faktörü (IGF) I ve II ve IGF bağlayıcı protein-3 aracılığıyla fibronektin, osteokalsin ve  $\alpha$ -1 kollajenin yapımını artırır, trabeküler kemik kütlelerini artırır(4,5). Yaşla birlikte vitamin D eksikliği gelişmesine bağlı PTH düzeyleri artar. Senil osteoporozda katkıda bulunan faktörlerden birisi de PTH artışıdır(6). PTH salgılanması ekstraselüler kalsiyum düzeyleri ve 1,25 (OH)<sub>2</sub>D tarafından düzenlenir(6).

PTH ile ilişkili bir diğer protein 141 aminoasitten oluşan PTH-ilişkili peptittir (PTHiP). İlk 13 aminoasitten 8'i PTH ile aynıdır, diğerleri de yapısal homoloji taşır(7). PTHiP kondrosit proliferasyonu ve diferansiyasyonu aracılığıyla erken dönemde iskelet gelişiminden sorumludur(6).

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ile daha fazla KMY artışı olduğunu gösteren çalışmalar vardır. Bu konuda kırık riskini de içeren daha fazla araştırmaya ihtiyaç vardır. PTH ve analogları kırık iyileşmesini hızlandırır, dental ve or-

topedik implantların peri-implant bölgelere daha iyi bağlanmasını sağlar. Bu nedenle kırık gelişen hastalarda kırık sonrası erken dönemde kullanılabilir.

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