KONU 17

# Manyetik Rezonans Görüntülemede Sedasyon

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Manyetik rezonans görüntüleme (MRG) çok güçlü bir mıknatıs ve radyo dalgaları kullanılarak görüntü elde edilmesini sağlayan, iyonizan radyasyon içermeyen, kesitsel bir radyolojik inceleme yöntemidir. İnsanlar sabit bir manyetik alan içine yerleştirildiğinde vücutlarındaki protonlar mıknatısın vektörü doğrultusunda paralel ve antiparalel dizilim göstererek dönüş (spin) yapar. Daha sonra radyo dalgaları gönderilerek dokulardaki hidrojen atomlarında sapmalar sağlanır. Radyo dalgaları kesildiğinde ise protonlar mıknatıs doğrultusundaki tekrar eski konumlarına döner ve dönerken aldığı enerjiyi geri verir. Bir alıcı vasıtasıyla bu enerji sinyale dönüştürülür. Her doku için oluşan sapma farklı olduğundan, eski konumlarına dönme zamanları da farklı olur. Bu sinyal farklılıkları bir işlemci aracılığı ile görüntüye dönüştürülür. İnsan vücudunda en fazla suda olmak üzere su ve yağ içerisinde hidrojen atomu fazladır. O nedenle özellikle beyin, kas-iskelet sistemi ve karın içi organlar gibi solid organların değerlendirilmesinde MRG etkin şekilde kullanılır. Akciğer dokusu, su açısından diğer sistemlere göre daha fakir olduğu için MRG toraksta bazı parankimal akciğer hastalıklarında da uygulanmakla birlikte, çoğunlukla mediastenin görüntülenmesinde, plevral sıvı/ampiyem, konsolidasyon ve kitle gibi solid lezyonların ayrımında daha etkili kullanılmaktadır (1).

Mevcut diğer radyolojik görüntüleme yöntemleri ile karşılaştırıldığında da en önemli avantajı iyonizan radyasyon içermemesidir. Akut, kısa süreli, statik manyetik alana [2 Tesla (T)'ye kadar] maruz kalmanın tehlikeli ya da geri dönüşsüz zarar verdiğine dair hiçbir kanıt görülmemektedir. Amerikada FDA'nın onayladığı manyetik saha limiti 4 T olmasına rağmen MRG işlemi sırasında sıklıkla 1,5 T değeri kullanılmaktadır (2).

Manyetik rezonans görüntüleme tarayıcısı ortalama 2 metre (m) genişliğinde, 2 m boyunda ve 3 m uzunluğundadır. Hasta, her iki tarafı açık,

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