BÖLÜM 14

RADYOFREKANS-ELEKTROMANYETİK ALANLARIN İNSAN SAĞLIĞI ÜZERİNDEKİ ETKİLERİ

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GİRİŞ

Radyasyon, güneş sisteminden ve yeryüzündeki doğal kaynaklardan salınan elektromanyetik dalgalar/parçacıklar biçimindeki enerji yayılımı ya da aktarımıdır. Elektrik yükleri hareketlendiğinde veya bir elektrik akımı oluşumunda ortaya çıkan temel parçacıklardan üretilen akımlar manyetik alanı oluşturur. Dünya yüzeyi, güneşten yayılan jeo-manyetik alanın etkisi altındadır. Bununla birlikte, dünyanın dış sıvı çekirdeğindeki ısı transferi sonucu oluşan kendi manyetik alanı da bulunmaktadır. Bu ısı değişimleri, dünyanın oluşumundan beri devam etmektedir. Dünya çekirdeğinin hareketi kendi manyetik alanını oluşturur. Atomların yeterli ve düzenli bir şekilde yer değiştirmesi ve yönlendirilmesi sonucu oluşan mıknatıslanma dünyan kabuğunda kalıcı mıknatıslanmaya neden olur. Bu nedenle, canlı organizmalar sürekli olarak elektromanyetik alanların (EMF) etkisi altında yaşamlarını sürdürmektedirler. Hızlı ilerleyen teknolojik gelişmeler, yaşamımızda pek çok kolaylıklar sağlamakla birlikte bizleri yapay elektromanyetik alanlara maruz bırakmaktadır. Her madde gibi insanın da bir manyetik alanı bulunmakta, bunun dışında yaşadığı çevredeki diğer doğal ve yapay manyetik alanların da etkisi altındadır. Özellikle iyonlaştırıcı radyasyonlar, hücrenin genetik materyalini parçalayabilecek kadar enerji taşımaktadırlar. Bu enerji, DNA'da oluşturduğu hasarlar sonucu hücreleri öldürmekte, dokulara zarar vermekte ve kansere yol açabilmektedir.

HAYATIMIZDAKİ ELEKTROMANYETİK ALANLAR

Günümüzde, doğal jeo-manyetik alanlara ek olarak teknolojik gelişmeler sonucu üretilen pek çok cihazdan da çevreye radyasyon yayılmaktadır. Bu radyasyon, uzaydan veya maddesel bir ortamdan yayılan elektrik/manyetik alanın oluşturduğu dalgalardır. Bu manyetik alanlar kapsamında, dalga boylarına göre gama

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kansa maruz kalan gebe farelerin blastomerlerinde DNA kırıklarının arttırdığı ve blastosist sayısının azaldığı gözlenmiştir (71,72). Bununla birlikte, benzer frekansa maruz kalan gebe kadınların plasenta doku hücrelerinde nükleus, sitoplazma ve hücre zarında olumsuz morfolojik değişiklikler, oksijen kullanımında azalma ve apoptozisin arttığı rapor edilmiştir (73,74). Diğer taraftan, mobil ağ ve Wi-Fi frekanslarına maruz kalan hamile kadınlarda düşüklerin ve fetüste herhangi olumsuz bir riskin gözlenmediği belirtilmiştir (75). Ancak, uzun süre GSM dalgalarına maruz kalan kadınlarda doğumdan hemen sonra bebeklerinde kötüleşmenin görüldüğü bildirilmiştir (76).

SONUÇ

Günümüzde, hızlı teknolojik gelişmelere bağlı olarak toplumun elektronik cihazlar ve akıllı telefonlar gibi kablosuz iletişim araçlarına olan talebi ve elektronik cihazların frekans aralıkları sürekli olarak artmaktadır. Elektronik cihazları kullanırken EM dalgaları insan ve hayvan vücudu tarafından emilmektedir. Özellikle, telefonun vücudumuz ile temas edilerek kullanılması ve kullanım sürelerinin artması sadece yetişkinleri değil, küçük çocukları da etkilemektedir. Toplumda, telefon ve diğer elektronik cihazlardan salınan EM dalgalarının olumsuz biyolojik etkileri konusunda endişeler giderek artmaktadır. Bu dalgaların genetik materyalimizde oluşturduğu hasarlar nedeniyle kanserojen olabileceği yönündeki kanaatin güçlendiğini söyleyebiliriz. Cep telefonuna maruz kalınması durumunda, sinir hücre hasarları, baş ağrısı, baş dönmesi, hafıza kaybı ve uyku bozukluğu gibi olumsuz nörolojik etkiler ortaya çıkabilmektedir. Bununla birlikte, EMF dalgalarının üreme biyoloji üzerinde de zararlı etkilerinin olduğu görülmektedir. Tüm bu zararlı etkiler dikkate alındığında, toplumda oluşan endişeleri gidermek için elektronik cihazların kullanımı konusunda uluslararası standartlara uygun düzenlemeler yapılmalı, bu konuda toplum bilinçlendirilmeli ve bu konudaki bilgiler toplumla açıkça paylaşılmalıdır.

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