5 BÖLÜM

# ACİL SERVİSTE YAPAY ZEKÂ DESTEKLİ KARAR DESTEK SİSTEMLERİ

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## GİRİŞ

Sağlık alanında en hızlı ve en zorlu karar alma süreçleri acil servislerde gerçekleşir. Hasta yoğunluğu, ciddi zaman kısıtları ve doğası gereği var olan klinik belirsizlikler nedeniyle acil servislerde doğru ve hızlı karar verme hayati öneme sahiptir (1). Klinik karar destek sistemleri, hekimlerin zorlu klinik ortamlarda doğru yönlendirme yapmalarına yardımcı olmak üzere tasarlanmış sistemlerdir. Bu nedenle acil servislerde karar destek sistemlerinin kullanımı hayati öneme sahiptir (2-4).

Klinik karar destek sistemleri, hasta verilerini kullanarak hekimlerin tanı, tedavi veya takip süreçlerinde karar almalarına yardımcı olan bilgisayar programlarıdır. Geleneksel karar destek sistemlerinin çoğu, önceden tanımlanmış protokoller ve klinik yönergelere dayanarak karar veren, kural tabanlı algoritmalardır. Bu nedenle karmaşık klinik durumlarla başa çıkmakta yeterli değildir (5, 6).

Gelişen teknoloji ile yapay zekâ destekli klinik karar destek sistemleri, geleneksel karar destek sistemlerinin yapay zekâ ile entegrasyonu sonucunda ortaya çıkmıştır. Yapay zekâ entegrasyonu, karar destek sistemlerini daha uyarlanabilir,

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DOI: 10.37609/akya.63.c669

lar hızla tanımlanarak uygun bakım alanlarına yönlendirilebilir. Bu tür sistemler bekleme sürelerini azaltarak mortalite ve morbidite oranlarının düşürülmesine katkı sağlar (13, 52, 53).

Radyolojik görüntülerin yorumlanmasında makine öğrenimi ve derin öğrenme algoritmaları kullanımı da giderek yaygınlaşmaktadır. Acil bakım, göğüs radyografilerinde zatürre tespiti, ultrason verileri kullanılarak iç organ hasarının değerlendirilmesi ve BT görüntülerinde travmatik beyin hasarının tespiti gibi uygulamalardan büyük ölçüde yararlanmaktadır. Bu sistemler, radyologların iş yükünü azaltırken klinisyenlere hızlı ve güvenilir tanı desteği sunmaktadır (54). Yapay zekâ destekli klinik karar destek sistemleri, ilaç dozlarının belirlenmesi, olası ilaç etkileşimlerinin tespit edilmesi ve hasta özelliklerine göre kişiselleştirilmiş tedavi rejimlerinin önerilmesi için olmazsa olmazdır. Örneğin, sepsis hastalarında sıvı resüsitasyonu veya antibiyotik seçimi için algoritmalar, klinik kılavuzları ve hasta verilerini entegre ederek gerçek zamanlı öneriler sunabilir. Bu yöntem, klinik prosedürlerin standartlaştırılmasına yardımcı olur ve tedavi gecikmelerini en aza indirir (8, 55) .

Acil serviste, kalp krizi, yoğun bakım ihtiyacı ve tekrar yatış olasılığı gibi komplikasyonlar, yapay zekâ destekli öngörü modelleri ile tahmin edilebilir. Bu sistemler yüksek riskli hasta grupları için klinik ekiplerin önleyici tedbirler almasını sağlar. Sonuç olarak hasta güvenliği artırılarak sağlık kaynaklarının daha etkili kullanılması mümkün kılınır (53, 56).

Acil servislerde mevcut olan sınırlı kaynakların (yatak, personel, ekipman vb.) en iyi şekilde kullanılması temel sorunlardan biridir. Yapay zekâ destekli klinik karar destek sistemleri hasta akışını simüle ederek ve geçmiş verileri kullanarak tahminler üreterek, kaynak tahsisini en üst düzeye çıkarabilir. Örneğin, hasta yoğunluğunun en fazla olduğu saatleri tahmin ederek personel düzenlemelerine yardımcı olabilir (13, 52).

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