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Bölüm 1

KÜLTÜR BALIKLARINDA MİKOBAKTERİYOZİS

Abdullah BOYRAZ[1]
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GİRİŞ

Su ürünleri yetiştiriciliğinin gıda tedarik zincirindeki rolü her geçen yıl istikrarlı bir şekilde artmaktadır. Dünya çapında balıkçılık ve su ürünleri yetiştiriciliği üretimi 2022 yılında rekor seviyeye ulaşarak 223,2 milyon ton olmuştur. Aynı yıl, üretimden elde edilen su ürünleri (130,9 milyon ton) ilk kez avcılık yoluyla elde edilen miktarı geride bırakarak toplam üretimin %51'ini oluşturmuştur (1). Su ürünleri üretiminde hastalıkların küresel ekonomik kaybının yıllık 6–10 milyar ABD doları civarında olduğu tahmin edilmektedir. Ancak, birçok yetiştiricilik sisteminde bakteriyel enfeksiyonları etkileyen koşulların çok çeşitli olması, çoğu zaman tek bir birincil bakterinin belirlenmesini zorlaştırmaktadır (2,3). Yoğun üretim sistemlerinde ortaya çıkan enfeksiyöz hastalıklar, özellikle bakteriyel ve kronik seyirli olanlar, üretimdeki kayıpların başlıca sebepleri arasında yer almakta ve sektörün sürdürülebilirliği açısından önemli bir sınırlayıcı olmaktadır (4).

Farklı ülkelerde yapılan araştırmalarda yetiştiriciliği yapılan çeşitli balık türlerinde bakteriyel patojenlerden kaynaklı ölümlerin 11,1-45,9 milyon dolar arasında değişen ekonomik kayıplara neden olduğu belirtilmiştir (3,5–7). Bu bağlamda, yoğun yetiştiricilik şartları ve çevresel faktörlerle birlikte öne çıkan önemli bakteriyel hastalıklardan biri de balık mikobakteriyozisidir. Mikobakteriyozis hem kültürü yapılan hem de doğal ortamlarda yaşayan birçok tatlı ve tuzlu su balık türünde görülen, kronik seyirli ve kontrolü güç bir hastalıktır. Hastalık düşük mortaliteyle seyretse de uzun süreli enfeksiyon, zayıf büyüme

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ve moleküler düzeyde epidemiyolojik yaklaşımları içermesi, hastalığın gerçek yaygınlığının ortaya konulması ve yeni *Mycobacterium* türlerinin tanımlanması açısından büyük önem taşımaktadır. Ayrıca, antimikrobiyal direnç izlemi ile balıklar, karasal hayvanlar ve insanlardan izole edilen *Mycobacterium* türlerinin genetik yakınlığının epidemiyolojik olarak araştırılması Tek Sağlık yaklaşımı çerçevesinde gelecekteki kontrol stratejilerinin temelini oluşturmalıdır.

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Bölüm 2

MİKROBİYOLOJİDE HAYVAN MODELLERİNE ETİK VE PRATİK BİR ALTERNATİF OLARAK HÜCRE KÜLTÜRÜ

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GİRİŞ

Biyomedikal ve veteriner araştırmalarının temeli konak-patojen etkileşimlerinin karmaşıklığını çözmek, yeni terapötiklerin güvenliğini ve etkinliğini doğrulamak üzerine geleneksel hayvan modelleri kullanımına dayanmaktadır (1,2). Ancak, hayvanların duygu ve refahına ilişkin önemli etik endişeler, yüksek maliyetler ve sonuçların diğer türlere aktarılmasını sınırlayabilecek biyolojik farklılıklar nedeniyle canlı hayvanların kullanımı giderek daha fazla sorgulanmaktadır (3). Buna yanıt olarak, bilim camiası, hayvan deneyleri için etik altın standart olarak "3R" ilkesini (Yerine Koyma, Azaltma ve İyileştirme) yaygın olarak benimseyerek -bilimsel olarak mümkün olduğunda- hissedebilen, hassas hayvanların yerine his duygusundan yoksun alternatiflerle değiştirilmesine öncelik vermektedir (4).

Hücre kültürü, hücrelerin, dokuların veya organların titizlikle kontrol edilen bir ortamda yetiştirildiği çok yönlü bir in vitro platform sağlayarak, bu etik değişimin temel taşı olarak ortaya çıkmıştır (3,5). İlk sürdürülebilir insan hücre hatlarının ortaya çıkması gibi tarihi bir dönüm noktasından bu yana, teknoloji basit iki boyutlu (2D) tek tabakalardan sofistike üç boyutlu (3D) sistemlere, organoidlere ve mikrofizyolojik "organ-on-chip"lere (6,7) doğru gelişmiştir. Bu gelişmeler, hücresel biyoloji, gen bilimi ve hastalık mekanizmalarını daha yüksek hassasiyet ve verimlilikle incelemek için daha tekrarlanabilir ve ölçeklenebilir bir yaklaşım sunmaktadır (8,9).

Veteriner mikrobiyoloji bağlamında, hücre bazlı yöntemler, geleneksel, rutin laboratuvar ortamlarında izole edilemeyen zorlu veya zorunlu hücre içi patojenleri izole etmek için vazgeçilmezdir (10,11). Ayrıca, aşı ve antijenlerin

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İn vitro modeller, kontrollü ortamlar sunmalarına rağmen, genellikle canlı bir organizma bağlamında farklı hücre tipleri arasındaki etkileşimlerin karmaşıklığını düzgün yansıtamamaktadır (3).

Hücre kültürünün bir diğer potansiyel zorluğu, hücre hattının özgünlüğünü ve stabilitesini korumaktır. Genetik sapma, fenotipik değişiklikler ve hücre hatları arasında çapraz kontaminasyon olasılığı, deney sonuçlarının tekrarlanabilirliğini ve yorumlanmasını tehlikeye atabilir. Örneğin, sürekli hücre kültürleri, özellikle uzun süre muhafaza edilenler veya hücre bankalarında depolananlar, genotipik ve fenotipik sapmaya maruz kalabilir ve bu da ilaçlara veya patojenlere verdikleri tepkiyi değiştirebilir (15).

SONUÇ

Hücre kültürü, birçok hayvan modeline göre çok yönlü, etik açıdan tercih edilebilir ve teknik olarak güçlü bir alternatif haline gelmiştir. Hücre fizyolojisi, konak-patojen etkileşimleri, ilaç etkinliği ve güvenliği, aşı ve antijen üretimi ve organoidler gibi gelişmiş alternatif stratejilerini incelemek için kontrollü ortamlar sunmaktadır. "Hücre kültürü, büyümeyi destekleyen tanımlanmış bir besin ortamında hücrelerin, fibroblastların veya dokuların in vitro çoğaltılmasını ifade eder." "Bunlar, hücresel süreçleri, yüksek verimli kontrolü ve hücre biyolojisi ve in vivo davranışları incelemek için denetimi kolay ortamlar sağlar." Geliştirilmiş 3D kültür sistemleri, kök hücre ve organoid teknolojileri, mikrofizyolojik cihazlar ve in silico modellemeyi birleştirerek, araştırmacılar, hayvanlara olan bağımlılığı azaltabilirler. Bununla birlikte, kontaminasyon kontrolü, hücre hattının özgünlüğü, sınırlı çok hücreli karmaşıklık ve standardizasyon ve doğrulama ihtiyacı gibi zorluklar devam etmektedir. Bu nedenle, hücre bazlı mikrobiyolojinin etik ve bilimsel potansiyelini tam olarak gerçekleştirmek için bu alanda yöntemlerin iyileştirilmesine, tamamlayıcı yaklaşımların entegre edilmesine ve düzenleyici çerçevelerle uyum sağlanmasına devam edilmesi gerekmektedir.

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Bölüm 3

VETERİNER AŞILARINDA YENİ NESİL ADJUVANTLAR

Aslı BALEVİ[1]
Derya KARATAŞ YENİ[2]

GİRİŞ

Aşı programları enfeksiyöz hastalıkların kontrolünde en etkili ve sürdürülebilir biyolojik müdahalelerden biri olarak kabul edilmektedir. Veteriner hekimlikte aşılar yalnızca bireysel hayvan sağlığını korumakla kalmaz; sürü sağlığını ve zoonotik hastalıkların kontrolünü destekleyerek gıda güvenliği açısından kritik rol oynar (1). Bununla birlikte modern veteriner aşı teknolojisi; inaktif aşı yaklaşımından moleküler düzeyde tasarlanmış subunit, rekombinant ve DNA aşılarına doğru yön değiştirmiştir. Bu durum bağışıklık yanıtının güçlendirilmesi için adjuvantlara duyulan ihtiyacı belirgin biçimde artırmıştır (2,3,4).

Adjuvant kavramı 20. yüzyılın başlarına kadar uzanmaktadır. Gaston Ramon'un enjeksiyon yerinde inflamasyon gelişen hayvanlarda daha yüksek antikor titresi gözlemlemesi ve ardından Freund tarafından geliştirilen yağ emülsiyonlarının güçlü immün yanıt oluşturması, adjuvant biliminin temelini oluşturmuştur (5,6). Daha sonra alüminyum tuzlarının kullanıma girmesiyle birlikte adjuvantlar hem insan hem de veteriner aşılarında standart bileşenler hâline gelmiştir. Ancak bu klasik adjuvantlar çoğunlukla humoral yanıtı artırmakta, hücresel immüniteyi sınırlı ölçüde uyarmakta ve lokal reaksiyonlar gibi istenmeyen etkiler oluşturabilmektedir (7).

Veteriner aşı geliştirme süreci, insan aşılarından belirgin şekilde farklı dinamiklere sahiptir. Öncelikle tür çeşitliliği oldukça geniştir; sığır, koyun, keçi, domuz, kanatlı, at, evcil hayvanlar ve su ürünleri gibi çok farklı immünolojik özelliklere sahip türlerde etkinlik beklenmektedir (8,9). Her türün antijen sunumu, sitokin profili ve bağışıklık polarizasyonu farklı olduğundan, tek tip bir adjuvant

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Bölüm 4

VETERİNER MİKROBİYOLOJİ LABORATUVARLARINDA MİKOLOJİK TANI VE BİYOGÜVENLİK

Gökçenur SANİOĞLU GÖLEN[1]

GİRİŞ

Veteriner mikrobiyoloji laboratuvarları, enfeksiyöz etkenlerin tanımlanması ve değerlendirilmesinde kritik bir role sahiptir. Mikoloji fungal etkenlerin çevresel yaygınlığı, fırsatçı patojen özellikleri ve uzun süren tanı süreçleri nedeniyle, diğer mikrobiyoloji alt disiplinlerinden ayrılmaktadır. Veteriner mikolojisi hayvan ve halk sağlığı açısından önem taşıyan, bulaşıcı ve zoonotik mantar hastalıklarının tanımlanması, teşhisi ve kontrolüne odaklanan temel bir veteriner bilim dalıdır (1-3).

Son yıllarda yeni ve antifungal dirençli mantar patojenlerinin ortaya çıkışı zoonotik etkileşimler, iklim değişikliği ve sıcak–nemli iklim koşulları gibi çevresel faktörlerle yakından ilişkilidir (4). Bu etmenler mantar hastalıklarının yayılımını doğrudan etkilemektedir. Elde edilen bulguların klinik ve epidemiyolojik bağlamda yorumlanmasını da gerektiren laboratuvar mikrobiyolojisi içerisinde mikoloji, ikincil bir disiplin olarak değil, biyogüvenlik uygulamalarının temel bileşenlerinden biri olarak ele alınmalıdır (4,5).

Mantar patojenlerinin zoonotik potansiyeli, iklim değişikliği ve çevresel faktörlerin fungal hastalıklar üzerindeki etkileri ile artan antifungal direnç, güncel ve önemli bir sorun alanı oluşturmaktadır. Artan antifungal direnci; sürekli araştırma, sürveyans ve yenilikçi tedavi yaklaşımlarını gerekli kılmaktadır. Bu zorluklar karşısında, mevcut antifungal ilaçların etkinliğinin korunması insan sağlığı açısından büyük önem taşımaktadır. Şekil 1'de antifungal ilaç direncinin gelişimi, mekanizmaları ve etkileri gösterilmektedir (3). Bu bağlamda, özellikle zoonotik mantar enfeksiyonlarındaki vaka artışları dikkat çekmekte; gelişmiş tanı

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Bölüm 5

ANTİMİKROBİYAL DİRENÇ ve KONTROLÜ

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1. GİRİŞ VE GENEL BİLGİLER

Akılcı ilaç kullanımı sağlık politikasının önemli bir alanıdır. Tüm ilaç tüketiminin %25'ini antibiyotikler oluşturmaktadır. Dünya Sağlık Örgütü her yıl muayene bazlı 100 milyon antibiyotiğin reçetelendiğini, bunların yaklaşık yarısının gerekli olmadığı halde kullanıldığını bildirmiştir (1). Hastanede yatan hastalarda antibiyotik kullanım oranının %25-40 olduğu ve gelişmekte olan ülkelerde ise sağlık bütçesinin %35'inin antibiyotiklere ayrıldığı gözlenmiştir. IMC verilerine göre ülkemizde tüm ilaç tüketiminin %25'ini antibiyotiklerin oluşturduğu bildirilmiştir (2).

Viral solunum yolu enfeksiyonlarında antibiyotik kullanımının gerekli olmamasına rağmen ülkemizde antibiyotiklerin daha çok üst solunum yolu enfeksiyonlarında kullanımı artarak devam etmektedir. Uygulamadaki sorunlar; antibiyotiklerin uygun olmayan doz ve sürede kullanılması, endikasyonu olmadığı halde antibiyotik kullanımına başlanması, mevcut enfeksiyonun tedavisinde uygun olmayan bir antibiyotiğin seçilmesinden kaynaklanmaktadır (3).

Antibiyotiklerin uygun kullanımındaki amaç; antimikrobiyal direnç gelişiminin en aza indirilmesi, en az toksisiteye sahip ilaçların seçimi ile tedavide ortaya çıkabilecek olası komplikasyonların azaltılması ve bu iki uygulamanın da en az maliyetle yapılabilmesidir (4,5).

Uygun antibiyotik seçimi de çok sayıda faktörle ilişkilidir. İlk olarak enfeksiyona neden olan patojen(ler)in tespit edilmesi veya varlığından kuvvetle şüphe edilen enfeksiyöz hastalığın tedavi edilmesi, ikincisi, etkenin antimikrobiyal

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Uygun antibiyotik kullanımı optimal seçim, optimal doz ve tedavi süresi, antibiyotik kullanımının kontrolü ile mikroorganizmalarda direncin oluşumunu yavaşlatma ya da önlemedir. Çoğu enfeksiyonlarda tedaviye yanıt izlenmeli ve gerektiğinde uygun değişiklikler yapılmalıdır. Enfeksiyonun edinildiği yerin toplum ya da hastane olması, hastanın daha öne hastaneye yatışı, önceki kültür sonuçları, önceki antibiyotik tedavileri göz önüne alınmalıdır. Antimikrobiyal tedavide kanıta dayalı tıp uygulamaları dikkate alınmalıdır. Mevcut kılavuzlar seçimde yol göstericidir. Bununla birlikte lokal, bölgesel ve ülke genelinde antimikrobiyallere direncin ve değişikliklerin sürekli izlenmesi önemlidir. Antimikrobiyal tedaviye hasta uyumu önemlidir. Hastanın tedaviye uyumu tedavi başarısında en önemli faktörlerden biridir. Hastanın tedaviye uymaması uygunsuz dozda ve sürede antibiyotik kullanımı antibiyotiklere direnç gelişiminde önemli bulunmuştur. Yine hastanelerde antibiyotik kullanım politikaları belirlemeli, politikalara uyum izlenmeli, gerekli değişiklikler yapılmalıdır. Hastanelerde dirençli patojenler sürekli izlenmeli, dirence yönelik antibiyotik kullanımı sağlanmalıdır.

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Bölüm 6

NEONATAL BUZAĞI İSHALLERİ: ETİYOLOJİ, TANI, TEDAVİ VE KORUNMADA GÜNCEL YAKLAŞIMLAR

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GİRİŞ

Buzağı ishalleri modern sığır yetiştiriciliğinde neonatal dönemin en önemli sağlık problemlerinden biridir; yaşamın ilk haftaları buzağının hayata adaptasyon sürecini tamamlamaya çalıştığı, immün sisteminin henüz tam olarak gelişmediği ve çevresel etkilere son derece açık olduğu kritik bir dönemdir (1,2). Bu dönemde görülen hastalıkların başında diyare gelmekte olup, neonatal mortalitenin önemli bir kısmından sorumlu tutulmaktadır. Ekonomik kayıplar yalnızca ölüm oranları ile sınırlı kalmamakta; tedavi giderleri, büyüme geriliği, ilerleyen yaşlarda süt verimi düşüşü ve sürüden erken çıkarma oranlarının artışı gibi uzun vadeli etkilerle de kendini göstermektedir (3-5).

Neonatal buzağı ishalleri multifaktöriyel bir yapıya sahiptir. Hastalık tablosu çoğu zaman tek bir etkene bağlı olarak değil; enfeksiyöz ajanlar, yetersiz pasif bağışıklık, çevresel stres faktörleri, besleme hataları ve sürü yönetim eksikliklerinin bir araya gelmesiyle ortaya çıkar (5,6). Bu nedenle buzağı ishalleri yalnızca bir enterik enfeksiyon olarak değerlendirilmemeli, sürü sağlığı yönetiminin genel kalitesini yansıtan bir gösterge olarak ele alınmalıdır (1,6-8).

Doğumdan sonra buzağıların immünolojik açıdan en zayıf olduğu dönem başlamaktadır. Sığır plasentasının epitelyokoryal yapısı nedeniyle intrauterin dönemde maternal immünoglobulin transferi gerçekleşmez (9,10). Bu durum, yenidoğan buzağının doğum anında agammaglobulinemik olmasına yol açar. Dolayısıyla yaşamın ilk saatlerinde alınan kolostrum, yalnızca bir besin kaynağı

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Gelecek perspektifleri, hastalığın kontrolünde teknolojik ve biyoteknolojik ilerlemelerin rolünü ön plana çıkarmaktadır. Moleküler tanı teknikleri, patojenlerin genetik çeşitliliğinin hızlı tespitini sağlayarak daha hedefe yönelik tedavi ve aşı stratejilerinin geliştirilmesine olanak tanıyacaktır (39). Mikrobiyota temelli yaklaşımlar ve probiyotik uygulamalar, bağırsak sağlığını destekleyerek bağışıklık sisteminin güçlendirilmesine katkı sunacaktır (31,38). Dijital sürü yönetim sistemleri ve sensör teknolojileri, hastalık belirtileri ortaya çıkmadan önce riskli buzağıların tespit edilmesine imkân tanıyarak mortaliteyi azaltmada yeni fırsatlar yaratmaktadır (41,43).

Ayrıca, antimikrobiyal direnç tehdidine karşı geliştirilen alternatif stratejiler, bakteriyofajlar, immün modülatörler ve biyolojik ürünler gelecekte tedavi ve korunma protokollerinde yer alabilecek potansiyele sahiptir. Bu tür yenilikçi yaklaşımlar, sadece hastalık kontrolünü geliştirmekle kalmayacak, aynı zamanda sürdürülebilir ve sorumlu hayvancılık uygulamalarının yaygınlaşmasına da katkıda bulunacaktır (42,43).

SONUÇ

Neonatal buzağı ishallerinin etkin yönetimi, yalnızca bireysel hayvan sağlığı açısından değil, işletme ekonomisi ve genel sürü sağlığı açısından da stratejik bir öneme sahiptir. Bilimsel temele dayanan bütüncül yaklaşımların benimsenmesi hem hayvan refahını artıracak hem de ekonomik kayıpları minimize edecektir. Gelecekte, gelişen teknoloji ve biyolojik uygulamalarla desteklenen bu stratejiler, neonatal buzağı ishallerinin olumsuz etkilerini en aza indirerek modern sığır yetiştiriciliğinde sürdürülebilir başarıya ulaşılmasını sağlayacaktır.

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Bölüm 7

SESSİZ PANDEMİ: VETERİNER HEKİMLİKTE ANTİMİKROBİYAL DİRENÇİN MEVCUT DURUMU, GELECEK PROJEKSİYONLARI VE YENİ NESİL TANI YÖNTEMLERİ

Ali USLU[1]
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GİRİŞ

Antimikrobiyal direnç (AMD), modern tıbbın ve veteriner hekimliğin üzerine inşa edildiği "mucize ilaçlar" dönemini sona erdirme riski taşıyan, küresel ölçekte en kritik on halk sağlığı tehdidinden biri olarak kabul edilmektedir (1-3). AMD, bakterilerin antimikrobiyallere karşı hayatta kalma stratejileri geliştirmesi ve bu ilaçların artık etkisiz kalmasına bağlı olarak enfeksiyonların tedavi edilmesini zorlaştırmakta; hastalıkların yayılma, ağır seyretme ve ölümle sonuçlanma riskini artırmaktadır (4-6). Ancak bu doğal süreç, antibiyotiklerin keşfinden bu yana geçen sürede çığ gibi büyümüş küresel halk sağlığını tehdit eden çok katmanlı bir krize, "Sessiz Pandemi"ye dönüşmüştür (2,7).

COVID-19, İspanyol gribi gibi aniden ortaya çıkıp dünyayı sarsan pandemilerin aksine, AMD on yıllardır yavaş ama istikrarlı bir şekilde büyüyen, her yıl milyonlarca can alan ve müdahale edilmediği takdirde gelecekte modern tıbbı felç etme potansiyeline sahip bir krizdir (7,8). Bakteriyel AMD 2019 yılı verilerine göre **1,27 milyon insanın ölümünden** esas sorumlu ve yaklaşık 5 milyon ölümde ise sekonder olarak ilişkili olduğu bildirilmiştir (9,10). Eğer mevcut eğilimler devam ederse, **2050** yılına kadar bu sayının **yıllık 10 milyon** ölüme ulaşacağı tahmin edilmektedir (11).

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kullanmaktan kaçının.

4. Antibiyogram testleri zaman alıyor gibi bahanelerin ardına saklanmak yerine hızlı tanı testlerine yönelin ya da bölgenizin/çiftliğinizin direnç haritasını çıkarın ve sürekli kontrol altında tutarak bu alanda fark yaratın.
5. Aşılamak tedaviden ucuzdur; Bireysel bazlı enfeksiyonu tedavi etmektense koruyucu hekimlik ve biyogüvenlik ile hastalığın sürüde oluşmasını engelleyerek antibiyotik baskısını azaltabilirsiniz.

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Bölüm 8

EVCİL KANATLILARDA SOLUNUM SİSTEMİNİ ETKİLEYEN BAKTERİYEL HASTALIKLAR: ETİYOLOJİ-EPİDEMİYOLOJİ-KORUMA-KONTROL VE TEDAVİ

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GİRİŞ

Solunum sistemini etkileyen kanatlı hastalıkları sürülerin üretkenliğini azaltarak üretim kayıplarına neden olmakta ve bu hastalıklarla mücadele için işletmeler tarafından yoğun uğraş verilmektedir. Kanatlıların anatomisi, solunum sistemi hastalıkları için predispoze edici yapısal unsurlar içerir. Kanatlılarda burun sinüslerini birleştiren kanalın darlığı salgıların boşaltılmasını zorlaştırmaktadır. Solunum yollarının histolojik yapısı da hayvanları enfeksiyonlara daha duyarlı ve yatkın hale getirmektedir (1).

Solunum yolu hastalıklarının morbidite ve mortaliteleri, yüksek prevalansları, pahalı tedavi gereksinimleri ve kanatlı performansı üzerindeki olumsuz etkileri, bu hastalıkları sektör için küresel bir tehdit haline getirmektedir. Hatta zoonoz olanlar halk sağlığını tehdit ederek iş gücü ve ekonomik kayıplara yol açmaktadır. Enfeksiyöz etkenler solunum yolu enfeksiyonlarına genellikle sürü yönetimiyle ilgili eksiklik ve hatalarla birlikte sebep olurlar (2).

Bu bölümde, yaygın görülen bakteriyel solunum yolu enfeksiyonları ile ilgili güncel bilgiler etiyoloji, epidemiyoloji, koruma-kontrol ve tedavi başlıkları altında ele alınarak siz değerli okuyucularımızın bilgisine sunulmuştur.

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SONUÇ

Kanatlı hayvanlarda solunum sistemi semptomlarıyla karakterize çok sayıda hastalık kümes hayvancılığımıza zarar vermektedir. Burada koruyucu hekimlik ön plana çıkmakta, hastalıkların oluşmasını engellemeye yönelik tedbirler öncelikle alınmalıdır. Profesyonel kümes yönetiminin yanında kanatlıları solunum sistemi hastalıklarına predispoze kılan havalandırma, temizlik, popülasyon yoğunluğu, ortamdaki toz ve partikül miktarı, ilaç ve dezenfeksiyon uygulamaları ve genel biyogüvenlik tedbirlerine azami dikkat edilmelidir.

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Bölüm 9

EVCİL KANATLILARDA SOLUNUM SİSTEMİNİ ETKİLEYEN BAKTERİYEL HASTALIKLARIN TANISI: KLİNİK SEMPTOM-NEKROPSİ- LABORATUVAR TANI

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GİRİŞ

Kanatlılarda görülen solunum sistemi hastalıkları, kendine özgü özellikleri olan ve bu sebeplerle sürekli bir problem olarak karşımıza çıkan hastalıklardır. Kontrol ve önleme, geleneksel biyogüvenlik programlarının güncellenmesine, klasik ve/veya yenilikçi teşhis ve önleme yöntemlerinin kullanılmasına dayanır (1). Kanatlı hayvan işletmelerinde solunum sistemi enfeksiyonları oldukça yaygındır. Teşhis için izolasyon, moleküler yöntemler ve diğer tanı testlerinin yapılması gereklidir (2). Kanatlıların barınma ve beslenme özellikleri göz önüne alındığında, üst solunum yolları dış ortamdan havayla giren tüm yabancı cisim, toz vb. materyaller ve enfeksiyöz ajanlarla ilk temas yeri olması açısından önemlidir. Savunma sisteminin zayıfladığı veya mukozanın tahribatı durumunda, patojen mikroorganizmaların yanı sıra normal florada bulunan fırsatçı patojen mikroorganizmalar da hastalık oluşturabilir (3). Böyle karışık durumlarda solunum sistemi hastalıklarının tanısının titizlikle yapılması gerekmektedir.

Bu bölümde, yaygın görülen bakteriyel solunum sistemi enfeksiyonlarının tanısında kullanılan güncel yaklaşımlar, klinik semptom, nekropsi ve laboratuvar tanı başlıkları altında ele alınarak siz değerli okuyucularımızın bilgisine sunulmuştur.

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