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Mycoplasmosis in Goats and Sheep

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ABSTRACT

Goats and sheep play a vital role in supporting rural livelihoods through milk, meat, wool, and income generation. However, their productivity is severely threatened by *mycoplasmosis*, a group of diseases, caused by *Mycoplasma* species, which lack a cell wall and are difficult to diagnose and treat. These infections can affect multiple organs, leading to pneumonia, mastitis, arthritis, eye infections, and reproductive problems, often resulting in economic losses and animal suffering. Contagious Caprine Pleuropneumonia (CCPP) and Contagious Agalactia (CA) are among the most damaging conditions, particularly in goats. Diagnosis relies on laboratory confirmation using culture, PCR, or serological methods, as clinical signs often resemble other diseases. Since success of treatment varies greatly, prevention is key. Vaccination (where available), strict hygiene,

biosecurity, and responsible antibiotic use are essential to limit outbreaks. Educating farmers to recognize symptoms and practice early intervention can protect herd health, safeguard milk yield, and ultimately sustain rural farming communities.

INTRODUCTION

In rural economies, goats and sheep have traditionally been considered important in supplying milk, meat, wool, and providing sustenance for millions of farmers worldwide. The health of these animals is directly linked to the farmers' income and possibly to the sustainability of livestock farming. One of the factors adversely affecting productivity is a disease called mycoplasmosis. This disease is caused by bacteria of the genus *Mycoplasma*. These bacteria are unique since they have no cell wall, thus making detection and treatment quite difficult. In goats and sheep, mycoplasmal infections may attack several parts of the body, causing problems in respiratory systems (lung), arthritis (joints), eyes, mastitis (udder), and sometimes even reproductive organs. Such kind of infections leads to diminution in productivity, mortality, and enormous economic losses. This article deals with the occurrence of mycoplasmosis in goats and sheep, symptoms imparted by disease, its diagnosis, and available methods for its prevention and control.

MYCOPLASMAL INFECTIONS IN GOATS AND SHEEP

Mycoplasmal infections in small ruminants hold a notable veterinary and economic position. Different species of *Mycoplasma* are involved in infections, each acting on different organs with its own clinical expression. Considered one of the extreme diseases in goats is Contagious Caprine Pleuropneumonia (CCPP), caused by *Mycoplasma capricolum* subsp. *capripneumoniae*. This highly contagious respiratory disease can spread quickly among goat herds, giving rise to severe pneumonia, pleural effusion, fever, and exceedingly high mortality. CCPP has been regarded as one of the most catastrophic goat diseases in Africa, Asia, and the Middle East, causing heavy economic losses. Other Mycoplasma species like *M. mycoides* subsp. *capri* and *M. capricolum* subsp. *capricolum* can also cause pneumonia in goats and sheep, but generally, their effects are less severe than those of CCPP. Another important problem faced, especially by dairy goats and sheep, is *Mycoplasma* mastitis. *Mycoplasma agalactiae* species and *M. mycoides* subsp. *capri* infect the udder, decrease milk yield, lower milk quality, and sometimes cause permanent damage to the mammary gland. This infection is often just one aspect of a complex symptom called Contagious Agalactia (CA). There are some *Mycoplasma* species that specifically involve the joints and cause arthritis, lameness, and a limitation of movement in goats and sheep. For instance, joint infections have been associated with *Mycoplasma capricolum* subsp. *capricolum*, *M. mycoides* subsp. *capri*, and *M. agalactiae*. Chronic arthritis is a cause of pain and suffering for the animals while at the same time lowering their productivity, in terms of growth rates and milk production. Certain strains of *Mycoplasma*, like *M. conjunctivae*, can cause keratoconjunctivitis in goats and sheep. Redness and watery eyes, clouding of the cornea in some cases, and partial blindness are symptoms that get spread seasonally and quickly through herds. Furthermore, certain species such as *Mycoplasma agalactiae* and members of the *M. mycoides* group infect the working reproductive system, therefore resulting in infertility, abortions, and increased neonatal mortality.

SYMPTOMS

The signs and symptoms of diseases due to mycoplasmal infection in goats and sheep largely depend on the organ system being involved and the *Mycoplasma* species responsible. In respiratory infections, especially in CCPP, the animals often develop a sudden set of high fever and are very harshly coughing with painful respiration. Many goats extend their necks and open their mouths possibly as an attempt to ease respiration. Fluid may get accumulated within the chest cavity in severe cases, and death rates may tend to soar; thus, CCPP is considered among the deadliest of goat diseases. Where the udder is concerned, as in Contagious Agalactia, the first signs are swelling and hardness of the mammary gland followed by marked reduction in milk secretion and sometimes complete cessation of milk secretion. Udder atrophy is characteristic sign of Contagious Agalactia. The milk may be thin or contain clots; the udder becomes painful, and the animal refuses to feed its young. Such infections could cause permanent damage to the udder, and hence a great loss to the dairy value of the animal. Joint infections are another common outcome of mycoplasmal disease. Species such as *M. mycoides* subsp. *capri* and *M. agalactiae* cause arthritis, resulting in swollen, painful joints. Animals affected may walk stiffly, limp, or just lie down. Weakness, weight loss, and poor productivity follow chronic arthritis. In eye infections, there will be keratoconjunctivitis. It starts with redness and excessive tearing, followed by the clouding of the cornea. If ignored, it might cause partial or total blindness. Rapid transmission within flocks makes outbreaks have the potential to affect large numbers of animals. The reproductive system may also be affected further, causing abortions, stillbirths, and weak infants, followed by sterility, in effect lowering herd productivity.

DIAGNOSIS

Laboratory confirmation is essential in identifying mycoplasmal infections because their symptoms often mimic those of many other bacterial or viral diseases. For example, *Pasteurella*-type pneumonia or certain viral diseases may be clinically similar to mycoplasmal pneumonia. Mastitis caused by *Staphylococcus aureus* may also be confused with mycoplasmal mastitis. Traditional methods of diagnosis include culturing the organism from the given specimens, nasal swab, milk, joint fluid, or lung tissue. Unlike many bacteria, mycoplasmas do not possess a cell wall and are quite fragile; hence special media and careful handling are needed. The formation of colonies is very slow, sometimes taking days, thus making culture difficult, tedious, and time-consuming. The fast and accurate diagnosis is the current day achievement. Polymerase chain reaction (PCR) techniques widely detect the DNA of certain *Mycoplasma* species, allowing one to identify strains such as *M. capricolum* subsp. *capripneumoniae* in CCPP or *M. agalactiae* in Contagious Agalactia. ELISA or other serological tests can recognize antibodies against *Mycoplasma*, facilitating the follow-up of infection spread within a herd. Usually in the field, veterinarians consider a combination of clinical history, characteristic symptoms, and laboratory tests to confirm the disease: sudden outbreaks of severe pneumonia with high mortality in goats being almost certainly CCPP and mastitis affecting multiple animals causing agalactia being suggestive of *M. agalactiae*. Early and accurate diagnosis is crucial, as it allows timely intervention and prevents significant economic losses.

PREVENTION AND CONTROL

When it comes to protecting goats and sheep from mycoplasmal infections, prevention is always the smarter choice. Once the disease spreads in a herd, it becomes extremely hard to get rid of it completely. Antibiotics like tetracyclines or macrolides can help in ease from the symptoms, but they rarely get rid of infection entirely because *Mycoplasma* is a tricky pathogen as it doesn't have a cell wall, which makes it resistant to many treatments. Tylosin or tiamulin is typically the drug of choice for managing mycoplasmosis. Vaccination is one of the best tools for the farmers. For example, vaccines are available in many countries to immune the goats from CCPP. Similarly, vaccines against *M. agalactiae* help in prevention of Contagious Agalactia in both goats and sheep. While these shots will not give lifelong immunity but they dramatically reduce the chances of outbreaks. Unfortunately, there is no vaccine available against mycoplasmosis in India. Good hygiene and biosecurity are very important as farmers should keep healthy animals separate from new or sick ones because direct contact and respiratory droplets are the main ways of disease spreading. Simple steps like quarantining new arrivals, keeping barns clean, and ensuring proper ventilation can make a huge difference or lowering in number of diseased animals. For udder infections, using hygienic milking techniques and isolating affected animals protects the rest of the flock and preserves milk quality. In short, controlling mycoplasmal infections is not about a single action but it is a combination of vaccination, careful hygiene, good husbandry, and responsible use of antibiotics. By following these steps, farmers can keep their animals healthy, reduce suffering, and avoid the financial losses also.

CONCLUSION

Mycoplasmal infections in goats and sheep pose a serious threat to animal health and farm productivity. These infections can affect multiple organs including the lungs, udder, joints, eyes, and reproductive system resulting in reduced milk production, poor growth, chronic lameness, blindness, and even abortions. Since treatment is often challenging and may not completely eradicate the infection, prevention remains the most effective approach. Timely vaccination, good hygiene, strict biosecurity, and early veterinary intervention are essential to control the spread of mycoplasmosis. Educating farmers to recognize early symptoms and isolate sick animals can further minimize outbreaks. Ultimately, effective management of mycoplasmal infections maintains healthier flocks, improves productivity, and supports stronger livelihoods for farming communities.

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