Ovine Progressive Pneumonia (OPP)

Etiology
OPP (also known as Maedi-visna) results from infection by the maedi-visna virus (MVV), a member of the genus *Lentivirus* in the family Retroviridae. OPP causes respiratory (Maedi) and neurologic (Visna) signs. Infected animals become chronic carriers. MVV is closely related to caprine arthritis encephalitis virus (CAEV) found in goats. These two viruses share many features and are often considered together as the small ruminant lentiviruses (SRLV).

Species affected
OPP affects sheep and, to a lesser extent, goats. Breed susceptibility varies. Serological evidence of SRLV infections has been reported in wild ruminants including mouflon, ibex, and chamois; however, preliminary evidence suggests that these viruses may be distinct from MVV and CAEV.

Geographic distribution
OPP has been found in most sheep-raising countries except Australia and New Zealand.

Transmission
Most animals become infected early in life, through ingestion (oral) of colostrum or milk. The virus can also spread during close contact, probably by the respiratory (aerosol) route. Indirect spread is thought to be rare.

MVV infects sheep or goats for life, but viral burdens vary between individual animals. Both asymptomatic and symptomatic animals can transmit this virus. Sheep can be a source of SRLV (OPP and CAE) transmission to goats, and vice versa.

Incubation period
Signs typically occur within 2-4 years of infection.

Clinical signs
Sheep: Wasting, progressive dyspnea and sometimes a dry cough. Illness is eventually fatal. Less commonly, neurologic signs similar to those seen in goats.
Goats: Disease usually begins insidiously, with subtle neurologic signs gradually progressing to ataxia, incoordination, muscle tremors, paresis and paraplegia. Other neurological signs, including rare instances of blindness, may also be seen. Unattended animals usually die of inanition (exhaustion due to starvation).

Sheep and Goats: OPP can also cause slowly progressive arthritis with severe lameness, or chronic indurative mastitis with decreased production of normal-appearing milk. Weight gain in lambs may be decreased, possibly due to lower milk yields from dams with indurative mastitis.

Zoonotic potential
Human infection with MVV has not occurred.

Diagnosis
Suspect OPP in animals that are at least 2 years old and have a wasting disease with slowly progressive respiratory distress, neurologic signs, indurative mastitis or arthritis.

Laboratory: MVV may be diagnosed by nucleic acid detection techniques such as polymerase chain reaction (PCR) assays, Southern blotting and in situ hybridization. PCR tests are used in some laboratories for rapid diagnosis. Blood, udder and/or milk, lung, mediastinal lymph nodes, brain, spinal cord, kidneys and spleen should all be submitted if available.

Differentials:
Respiratory signs: pulmonary adenomatosis, parasitic lung infections, and caseous lymphadenitis with lung involvement.
Neurologic signs: scrapie, listeriosis, rabies, louping ill, parasitic central nervous system (CNS) infections and space-occupying lesions of the CNS should also be considered. Caprine arthritis and encephalitis can also resemble maedi visna.

Prevention and control
Management practices can influence the prevalence and frequency of infection. Additions to uninfected herds should come from MVV-negative herds. Avoid contact between uninfected herds and untested or seropositive herds, as horizontal transfer of the virus contributes to transmission. MVV can be eradicated from a flock, or reduced in prevalence by immediately isolating lambs from seropositive dams at birth and raising them on uninfected or pasteurized colostrum or milk replacer. Other control measures include frequent testing of the flock, separation of seronegative and seropositive sheep and eventual culling of seropositive sheep.

Notification of authorities
Maedi-visna is a reportable disease in many states. State authorities should be consulted for more specific information.
Federal: Area Veterinarian-in-Charge (AVIC) http://www.aphis.usda.gov/vs/area_offices.htm

For more information
- Center for Food Security and Public Health, Iowa State University http://www.cfsph.iastate.edu/DiseaseInfo/

This information was developed by staff veterinarians at the CFSPH for use as training materials for the USDA APHIS National Veterinary Accreditation Program.