Equine protozoal myeloencephalitis (EPM) is a neurologic disease of horses found throughout North, Central, and South America. It is caused by Sarcocystis neurona, a parasitic protozoan that lives in the central nervous system (CNS) of horses. The disease can manifest as a variety of symptoms, including stiffness, ataxia, and incoordination.

Veterinarians diagnose horses with EPM based on history, clinical signs, a neurologic exam, and serologic (blood) or polymerase chain reaction (PCR) tests. Howe noted, however, that PCR tests are being used less frequently due to false negative results, and that lateral flow antigen tests are gaining in popularity due to their accuracy. Howe said that one recent EPM research development has been the discovery of SnSAGs, which are proteins covering the surface of EPM strain SN3, which he said should be a resource for discovery and characterization of parasitically specific antigens and virulence factors.

Basic EPM research is needed to help understand parasite infection, Howe said. Currently, a whole genome sequencing project is underway to determine the whole genome of Sarcocystis neurona.

Howe began with an overview of the primary causative organism's (Sarcocystis neurona) lifecycle. He explained that this parasite is fairly specific, and its major characteristic are the hallmark cysts called sarcocysts that form in intermediate host animals (e.g., opossums, armadillos, porcupines). When one of these infected animals is killed, it might get consumed by a scavenging opossum, which in turn consumes the sarcocysts and releases the parasite. Howe went on to describe a recent multi-investigator study evaluating 128 cases diagnosed by postmortem examination. The horses or were normal.

Howe emphasized that new EPM diagnostics are available (e.g., SNSAG2, 4/3 ratios) and noted a need for additional treatment options. "Basic EPM research is ongoing and will help lay the foundation for future studies that can lead to development of clinical applications," he said.

Prevention is the best treatment. Howe suggested avoiding the transmission source by normal passive transfer of antibodies from the blood across the blood-brain barrier. "To test for CNS production of antibodies, we might use a Western blot assay that can quantify, which is why the Western blot results for CSF could be misleading," he added. Howe said that one recent EPM research development has been the discovery of SnSAGs, which are proteins covering the surface of EPM strain SN3, which he said should be a resource for discovery and characterization of parasitically specific antigens and virulence factors.

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"Factors influencing this might include immune competence and/or inoculum size (number of parasites the horse ingests)," Howe said. "However, it must be remembered that the presence of antibodies in blood indicates infection, but not disease," said Howe.

"Infectious Diseases, held Oct. 21 in Lexington, Ky., Dan Howe, an equine infectious diseases specialist at the University of Georgia and an associate professor of veterinary medicine at the Georgia College of Veterinary Medicine, gave an update on EPM diagnosis, treatment, and prevention. Howe is an equine veterinary infectious diseases specialist and the lead investigator of the multi-investigator study evaluating 128 cases diagnosed by postmortem examination.

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