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Serum Hepatitis in the Horse & When to Use TETANUS ANTITOXIN vs. TETANUS TOXOID

There is a disease syndrome called “serum hepatitis” that affects horses. This is a very rare event and is linked to administration of equine serum origin products. About 20% of horses with idiopathic (unknown cause) acute hepatic disease (IAHD) show clinical signs of liver failure (anorexia, lethargy, jaundice) within 4 – 10 weeks after receiving an equine origin biologic – hence the name “serum” hepatitis.¹ One of the most common equine serum origin products used in the field today is tetanus antitoxin. Many other equine serum products, including normal horse plasma, have also been linked to serum hepatitis.^{2,3,4} This link between equine serum origin products and hepatitis has been well documented for almost 90 years.⁶ The cause of serum hepatitis is not known^{2, 5}. As mentioned earlier, it is a very rare event (incidence is ~1:500,000 doses sold - based on Colorado Serum data), but “outbreaks”^{1,4} have been reported every few years with multiple horses in the same and sometimes different geographic areas involved. Some horses will develop hepatitis having never received an equine serum product before.^{1,5} Some toxic plants, moldy corn and blue-green algae can also cause hepatitis.¹ There is not an equine specific virus that causes hepatitis and there has been no causative agent identified in cases of serum hepatitis despite repeated attempts to do so.^{2,5} Attempts to transmit the disease experimentally have also failed.^{2,4,5} The most plausible causative explanation/theory is a type III hypersensitivity reaction^{1,7} which is a type of allergic reaction where antigen-antibody complexes form in the liver which results in hepatitis and has a mortality rate of 50 – 83% once symptoms begin. The “antigen” in these cases is speculated to be some inherent equine protein that is present in the serum product. This is not a “contaminant” but instead would be a protein found in horse serum products that apparently can induce an allergic reaction (which results in hepatitis) in a very select few recipient horses and/or under select conditions and is impossible to predict. Because of this link, there is a warning regarding serum hepatitis in every equine serum origin product sold by all manufacturers.

A prudent measure to avoid the risk of serum hepatitis is to vaccinate your horse with tetanus toxoid on a regular basis. By vaccinating your horse as a foal at 5 or 6 months of age with a booster 30 days later, followed by annual boosters (with pregnant mares getting their annual booster 2 - 4 weeks before foaling), the need to use tetanus antitoxin is eliminated. In events when a vaccinated horse (vaccinated ≤12 months prior) receives a wound, all that is necessary is a tetanus toxoid booster, along with antibiotics. Tetanus antitoxin should be used (along with antibiotics) in wounded horses that have no previous history of tetanus toxoid vaccination, or are overdue (>12 months) for a tetanus toxoid vaccination, or in cases of treatment for tetanus disease, your veterinarian should be treating the animal with adjunctive therapy and very large doses of tetanus antitoxin.

Tetanus antitoxin is usually a very safe biologic that has its place in the equine world, but its use, like all biologics, is not without risk and serum hepatitis is a unique and very rare risk associated with equine serum products. For this reason it is wise for horse owners and veterinarians to be aware of these risk factors when using biologics and to understand when tetanus antitoxin is indicated vs. a tetanus toxoid booster. Colorado Serum Company also manufactures an economical single fraction tetanus toxoid.

References:

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