

Reproductive Disorders in Horses



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KEYWORDS

- Horse • Theriogenology • Reproduction • Male • Female • Ovary • Testicle
- Abortion

KEY POINTS

- Reproductive disease is relatively common in the horse, resulting in a variable, yet significant, economic impact on individual horsemen as well as the entire industry.
- Diverse expertise from the veterinary community ensures and improves individual and population health of the horse.
- Communication between veterinarian, diagnostic pathologist, and owner provides best environment to provide accurate diagnoses.

INTRODUCTION

Reproductive disorders are common in the horse and can represent a significant proportion of the caseload to the equine practitioner. The diagnostic approach to reproductive disorders of the horse could be quite variable, inclusive of physical examination, ultrasonography,¹ rectal palpation, clinical endocrinology,² molecular genetics,³ cytogenetics,⁴ surgical pathology, and necropsy, among many approaches. Owing to the scope and title of this article, it focuses on pathology and diagnostic approaches to equine reproductive disorders. This focus necessitates exclusion of comprehensive or incidental coverage of other important aspects of equine reproduction, including mammary pathology.

The construction of this review is further limited, by pragmatism and principle, largely to discussions of reproductive disorders described from gross observations. Histopathologic techniques, although important and usually more specific and refining of morphologic observations, are not commonly pursued in intact equine breeding animals, with the necessary exception of the endometrial biopsy discussed later. Therefore, this review focuses more heavily on gross lesions and salient gross observations.

This review is divided into 2 main parts beginning with consideration of pathology and diagnostics of the female horse with reproductive disorders and ending with consideration of pathology and diagnostics of the male horse with reproductive

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disorders. Intersex conditions are important in the horse, occurring with modest frequency, and have been recently reviewed.⁵

REPRODUCTIVE DISORDERS OF THE FEMALE ABORTION AND STILLBIRTH

Abortion and stillbirth conditions cause significant economic impact on individual equine enthusiasts and the industry as a whole. Although the causes of equine abortion range from the toxic to the infectious, practical epidemiology and other realities limit the scope of discussion to the infectious causes, with 1 exception, the mare reproductive loss syndrome (MRLS), covered last. The delineation between an abortion and a stillbirth is often arbitrary and does not significantly alter the following discussion. However, a stillbirth is generally distinguished from an abortion in that the stillborn equine fetus is born dead in a late term time frame where it otherwise could have been expected to live.

Equine Arteritis Virus

Equine arteritis virus, an RNA virus in the *Arterivirus* genus, is an important cause of reproductive loss in horses. There can be remarkable strain differences in virulence, and acute infection of adult horses ranges from very mild signs to severe fevers and manifestations of edema.⁶ The virus can be transmitted via respiratory secretions between horses having close contact. Importantly, stallions, usually carriers of the virus, can transmit the virus to susceptible mares via breeding.⁶

Infection of the pregnant mare with equine arteritis virus usually results in abortion or stillbirth, usually a few weeks after the acute febrile episode. Fetal lesions are usually nonexistent or very nonspecific. Term foals born alive often die within a few days and display widespread histologic inflammatory lesions, often focusing on vessels.^{6,7}

Diagnosing equine arteritis can be accomplished by virus isolation and/or polymerase chain reaction (PCR) from nasopharyngeal or conjunctival swabs or from semen. Serologic tests are also available, and immunohistochemical staining techniques can be used on histologic specimens.^{6,7}

Equine Herpesvirus 1

Equine herpesvirus 1 (EHV-1) is a DNA virus causing 3 presentations of equine illness. Abortion is a major presentation and is thus included here, but EHV-1 also causes a mild, transient upper respiratory tract infection and a severe, sporadic equine herpes myeloencephalopathy.⁷

EHV-1 is contagious, and transmission is readily completed via respiratory pathway. It is thought that most horses are affected before they are yearlings, and the virus can enter a period and locale of latency. Immunity to the virus is usually considered fairly low, and immunization regimens are recommended for pregnant mares.⁷

EHV-1 abortion is almost always a third trimester abortion, and yet the infectious event and timing is often not known, either ranging from recrudescence of a latent infection or mare exposure to another infected horse on the premises. Also, the incubation period could range from days to months, yet infection of mares before the fifth month of gestation usually does not incite abortion.^{7,8}

The virus infects the vasculature of the placenta, and expelled fetuses exhibit an array of changes ranging from quite modest to more-specific changes. Fetuses are usually edematous and have some meconium staining. There may be variable to significant multifocal necrosis of the lungs and the liver. Within the liver, these foci may be grossly detectable as disseminated white foci (**Fig. 1**). Lungs may display significant

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