STUDIES ON PORCINE PARVOVIRUS INFECTION IN BOARS

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The effect of Porcine Parvovirus (PPV) infection in boars is largely unknown. A recent Japanese study indicated that some mild histological changes were noted in testicular tissue following infection. Porcine parvovirus has been isolated from seman but the role of seminal transmission in the pathogenesis of PPV reproductive failure is poorly understood. The following studies were designed to determine the effects of PPV infection on testicular and epididymal tissues in boars.

Six 8 month old PPV seronegative boars were infected with a virulent strain of porcine parvovirus (PPV) by the intra-muscular (IM) (3 boars) and intratesticular (IT) (3 boars) routes. Cell culture media was injected into the testicle of a 10 month old boar to serve as a control. The boars remained clinically normal following inoculation with the exception of mild testicular swelling noted in one of the IT injected boars. Testicle and epididymis were collected by unilateral castration 3,7,10,14,21, or 28 days post-infection (PI) for each group.

Gross abnormalities including IT injection sites were not detected excepting petechial hemorrhages were noted in one IM injected boar 7 days PI. This was probably related to scrotal inflammation from a previous (4 days) unilateral castration.

PPV was isolated from testicular tissue 3 and 7 days PI in the IT group and 3,7,10 and 14 days PI in the IM group. PPV was isolated from epididymal tissue 3,7,10 and 14 days PI in the IT group and 3,7,10 and 14 days PI in the IM group.

Presence of viral antigen was detected by immunofluorescence (FA) in testicular tissue 7 days PI in the IT group and 3,7,10 and 14 days PI in the IM group. Viral antigen was detected in epididymal tissues 7, 10 and 14 days PI in the IT group and 7 days PI in the IM group.

Location of fluorescence in testicular tissues indicated that infection occurs primarily in the interstitial areas. Some fluorescence was noted in the semeniferous tubule tissue and in the tubular lumen. Fluorescence in epididymal tissue was likewise observed primarily in interstitial tissue, although fluorescence was noted in the lumen especially in the head of the epididymis.

Histopathologic results of the IM group were largely unremarkable. Mild interstitial edema and mononuclear cell aggregation were noted occasionally in testicular tissues. Results of the IT group were quite dramatic. One of the three boars elicited a granulomatous inflammatory response in the interstitial tissues with loss of tubule integrity in some areas. The other 2 boars elicited a very mild interstitial response but large multinucleated cells were observed in the lumen of semeniferous tubules and epididymal lumen. This response was also observed in the IT control boar.

Conclusions:

These findings indicate that PPV is probably shed in the semen as evidenced by the presence of viral antigen in epididymal lumen. The duration of shedding is unlikely to be very long as the virus was cleared from testicular and epididymal tissues by 21 days PI. Shedding via the accessory sex organs may also occur however. The effects of PPV on testicular and epididymal tissues were minimal in the IM inoculated group. It would appear that IT injections have very detrimental effects on testicular tissues regardless of the presence of PPV in the inoculum.

Selected references: Lucus, et. al: J. Comp. Path. 1974, 84: 347-350. McAdaragh and Anderson: Proc. 18th An. Mtg. Am. Assoc. Vet. Lab. Diag.: 69-76. Ogasa, et.al.: Jap. J. of An. Repro.: 1977, 23 (4): 171-175.