PERSISTENT INFECTION OF A PSEUDORABIES VIRUS CONTAMINATED SWINE HERD, AN ERADICATION PROGRAM AND LATENT VIRUS INFECTION OF SEROPOSITIVE SOWS

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Latent infection of herpesviruses in clinically normal hosts were previously reported, either in human with herpes simplex virus or in animals, like cattle with infectious bovine rhinotracheitis virus and swine with pseudorabies virus (PRV). Persistence of PRV in healthy pigs was recrudesced shedding occurring over a considerable period, either naturally or in response to a corticosteroid stimulus. Most of workers detected the latent PRV in clinically recovered pigs infected experimently. Eradication of PRV from contaminated farms by removing seropositive pigs periodically monitored by double immunodiffusion (DID) or serum neutralization test (SNT) was not satisfactorily succeeded by several workers, particular with a large pig farm. This report deals with the recrudescent shedding PRV of clinically healthy sows from a recent contaminated farm and a successful eradication program.

A large breeding pig farm of the government property with 1430 sows, 604 gilts and 1834 piglets, where had an acute outbreak of PR lately ; with 2.52 % of sows and 12.41 % of piglets showing clinical diseases, was selected for the test. Thirty eight of 48 seropositive sows with serum antibody titers ranging from 1:2 to 1:8 were intramuscularly inoculated daily with dexamethasone (DM), 5 mg/kg of body weight for 5 days. Ten non-treated sows served as control. Nasopharyngeal swabs and serum samples were collected daily or weekly intervals at pre and post DM treatment for virus isolation and PR antibody titration, respectively. Rectal temperatures were taken daily from all tested sows. Tissues of 7 sows were also collected for virus isolation at one month after the DM treatment. RK-13 and ESK cells were used for virus isolation and the isolates were confirmed by immunofluorescence. An eradication program was carried out 2 months later since the appearance of the acute infection by testing and removing all seropositive pigs, detected by DID and SNT. No PR clinical disease has been observed since the acute outbreak occurred.

For recrudescent shedding test, PRV was isolated from one of 48 sows before the DM treatment. However, the number of DM treated sows intermittent shedding PRV in their nasopharyngeal fluid increased significantly after the treatment as shown in Table 1. The number of sows shed PRV reached to a peak at day 3, 4 and 5 after the treatment, decreased gradually thereafter. Only one or no sow was found to continue shedding 9 days after the last dose of DM employed.

Table 1. N° of sows shedding PRV after treatment with or without dexamethasone.

	Day after treatment											Total**
	pre	1	2	3	4	5*	6	7	14	21	28	
10 non treated	0	2	2	1	0	0	0	1	0	0	0	4 (40 %)
38 DM treated	1	4	5	15	11	11	7	6	1	1	0	32 (84.2%)

* DM was daily given to each sow for 5 days.
** Total n° of pigs shedding PRV.

Six sows either in treated or non treated group were found no PRV shedding throughtout the test period. Clinically, 3 DM treated pregnant sows showed mild temperature response (40-40.4°C) on the 4th day and aborted on the 5th day after DM treatment. Interestingly, 2 of 3 aborted sows did not shed PRV throughtout the test course. Isolation of PRV from tissues of 5 DM treated and 2 non-treated sows was indicated in Table 2. PRV was recovered most frequently from tonsil, lymph nodes, olfactory bulb and lung.

Table 2. Virus isolation from tissues of 7 sows.

N° sow	Olfactory bulb	Tonsil	Retrophary geal LN	Spleen	Lung	Kidney
1	+	+	-	-	+	-
2	+	+	+	-	+	-
3	+	-	+	-	-	-
4	-	+	-	-	-	-
5	-	+	+	-	-	-
6	-	-	-	-	+	-
7	-	-	-	-	-	-

Serum neutralization antibody titer against PRV was found significant raising in 14 of 38 DM treated sows but none in control. Two folds raising in antibody titer was considered significant because the titration of all serum samples were carried out at the same time. Among 14 sows, 8 had 4 to 8 folds increasing in SN antibody titers as compared with the samples collected at pre and 3 weeks after the DM treatment.

An incidence of 17.42 % of PR antibody prevalence was obtained among 3036 pigs detected by DID 2 months after the acute outbreak : 32.85 % of 898 sows, 25.47 % of 585 gilts and 5.47 % of 1553 piglets. Eradication program was immediately started by removing all seropositive pigs detected by DID monthly. At the first 6 months, the number of seropositive pigs was found with no decreasing evidence as the program carrying out (Table 3). The detection of PR antibody at the 6th month was done by DID and SNT. About 2.3 folds of seropositive pigs were detected by SNT than by DID. The SN antibody titer 1:2 was considered positive. Therefore the SNT instead of DID was used for monitoring PR antibody thereafter. The number of seropositive pigs decreased greatly, but not completely in the subsequent 2 months period. Removing seronegative instead of seropositive pigs to a clean area was also done on the 6th month. Dramatically, none of the pigs was detected as positive in the further 2 tests. We considered that a successful eradication was obtained.

Table 3. Incidence of PR antibody prevalence.

Month	1	2	3	4	5	6	7	8	9	10
N° tested	3036	1182	1808	1372	1547	1184	1082	934	920	920
N° pos. (%)	17.4	6.6	8.6	9.4	12.6	7.9+ 16.6++	0.6	0.3	0	0

\+ Detected by DID. ++ Detected by SNT.

Conclusion :

The occurence of latent PRV infection of clinically normal pigs under field condition was observed either naturally or in response to corticosteroid stimulation. The recrudescent shedding PRV from carriers was more significantly in stressed condition as induced with DM. Eradication of PRV from contaminated pigfarms could be achieved by removing the seronegative pigs detected by SNT to a clean area.

Selected references : Beran, G.W., Davies, E.B., Arambulo, P.V., Will, L.A., Hill, H.T., Rock, D.L. : JAVMA 1980, (176) : 998 ; Sabo, A., Rajcani, J. : Acta Virol. 1972, (20) : 208 ; Sheffy, B.E., Rodman, S. : JAVMA 1973, (163) : 850.