PORK QUALITY IMPLICATIONS OF PCV2 VACCINES UNDER NORMAL CONDITIONS OF USE

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Introduction

In a pilot laboratory experiment to assess the comparative prevalence and severity of lesions induced by various commercially available porcine circovirus type 2 (PCV2) vaccines, the Fort Dodge and Intervet PCV2 vaccines were found to induce significantly more severe lesions than saline control injection sites and Boehringer Ingelheim (BI) PCV2 vaccine injection sites.[1] This second study was conducted in the field under normal conditions of use to identify potential persistence of residual injection site lesions at slaughter subsequent to vaccination with the same vaccines.

Materials and Methods

This field study applied vaccines using typical commercial vaccination methodology. Approximately 300 pigs per group were vaccinated with one of three commercial PCV2 vaccines. No other injections were administered to study pigs during the trial. If individual treatment was needed, pigs were removed to a treatment pen and withdrawn from the injection site study.

Pigs were injected with the various vaccines intramuscularly on the right side of the neck at approximately 21 days of age (BI Ingelvac CircoFLEX®= 1mL dose; Fort Dodge Suvaxyn® PCV2 One Dose = 2mL dose, Intervet Circumvent PCV vaccine = 2mL doses). The Intervet group received a second dose two weeks after first injection. Subsets of twenty pigs per treatment were removed 14 days following final injection, with results reported elsewhere. The remaining animals were held to slaughter.

Randomly selected subsets of animals were taken to a commercial packing plant, and medial lateral cervical muscle sections (Boston Butt retail cut) collected. Presumptive gross lesions were noted on physical examination at the Iowa State University Veterinary Diagnostic Laboratory. Histologic slides were processed. All collections and scoring were double blinded. Confirmation of gross lesions and histologic scoring were made on a 1-5 scale.[2] Only lesions with both gross and microscopic pathology were considered as "confirmed lesions".

Statistical analyses were made on normal, continuously distributed variables by ANOVA with Tukey's HSD utilized to identify which groups were significantly different from one another (JMP, Cary, NC). Proportions were analyzed by Pearson's Chi Square tests (Statistix 8.0, Tallahassee, FL).

Results

Five of 300 (5/300) pigs died within the first 24 hours post-injection in the Fort Dodge vaccine group, with the deaths attributed to anaphylactic reaction to vaccination. No pigs from other treatment groups died during this timeframe.

Ingelvac CircoFLEX® vaccinated pigs had no confirmed intramuscular gross or histologic injection site lesions at slaughter (0/53).

In contrast, overt gross and microscopic lesions were noted in both the Fort Dodge (1/57; 1.75%) and Intervet (4/58; 6.90%) vaccine groups. Three abscesses were detected in Intervet pigs. Two granulomas with chronic inflammatory tissue were noted, one each in Intervet and Fort Dodge pigs. Confirmed lesion frequency was significantly higher in the Intervet vaccine group ($p \leq 0.05$) compared to the Ingelvac CircoFLEX® group. Lesion frequency in the Fort Dodge vaccine group was not statistically different from the other groups.

Discussion

The prevalence and severity of vaccine injection site lesions were demonstrated by presence of both gross and microscopic lesions in those pigs where lesions were present. Grossly, lesions were typical of sterile abscesses induced by irritating substances, and would be highly undesirable in any food service setting. Focal abscesses were up to 9 ml in volume, and consisted of purulent and mineralized debris. Granulomatous lesions had chronic fibrous tissue formation. Lesions were present both in muscle and adipose/fascial tissues.

The results of this study, and its predecessors, illustrate the comparative differences in local and systemic reactivity of commercially available PCV2 vaccines. These differences may persist into the food chain, with implications for pork quality assurance. In addition to efficacy and animal welfare considerations, pork quality assurance implications should be carefully considered when selecting products for immunization of swine.

References

1. Schwartz K, et al. 2007 *Proc 5th Intl Symp Emerging and Re-emerging Pig Dis*:116.
2. Christmas R, Kolb J. 2007 *Proc Allen D Leman Swine Conf - Recent Research Reports Suppl*:15.