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Steven Claas

Production Assistant

Steven Claas

Janice Storebo

Sarah Summerbell

Layout and CD-ROM

David Brown

Tina Smith

Logo Design

Ruth Cronje, and Jan Swanson;

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What is the optimum age for processing neonatal pigs?

S. Torrey,¹ N. Devillers,¹ M. Lessard,¹ C. Farmer,¹ T. Widowski²

¹Agriculture and Agri-food Canada, Dairy & Swine Research Station, Sherbrooke, QC, Canada; ²Department of Animal & Poultry Science, University of Guelph, Guelph, ON Canada

Neonatal pig management practices, such as tail-docking, teeth clipping and castration, have come under public scrutiny because of the ambiguity regarding their necessity and the lack of research into ways of reducing pain and distress during and immediately after these procedures. Procedures like castration have been shown to be painful to the piglet at any age, and seldom, if ever, are anaesthetics or analgesics used. Seemingly less invasive procedures such as tail docking, teeth clipping and ear notching also appear to cause pain and distress, although probably to a lesser degree than castration. Currently, organizations such as the National Pork Board and the Canadian Agri-Food Research Council recommend that producers tail dock, ear notch, and teeth clip neonatal piglets when they are less than 24 hours old because the procedures are considered to be less stressful for the pig at that age. However, data to support this recommendation was lacking. Therefore, the objective of this experiment was to compare the effects of processing during the first 24 hours versus 3 days of age on piglet suckling behavior, passive immunity and growth.

Six piglets per litter from 20 litters (n = 120 piglets) were used in a 3 × 2 complete block design. Each litter comprised a complete block. Piglets were weighed at birth and assigned to one of three treatments (balanced by birth weight): control (C), sham processed (S) and processed (P) (tail docked and ear notched) at either 1 day of age (15.3 ± 5.1 hrs after birth) or 3 days of age (64.1 ± 6.5 hrs after birth). Vocalizations were recorded during treatment, and piglets were observed immediately after treatment for pain-related behavior. Suckling behavior was observed for six hours on each of days 1-4. Colostrum was collected on unsuckled teats, and blood samples were collected from piglets via jugular venipuncture on day 5 to examine levels of immunoglobulins (IgA and IgG) and insulin-like growth factor-I (IGF-I). Piglets were weighed at birth and on days 5 and 14.

During treatment application, P piglets vocalized at a higher frequency than S piglets ($P < 0.0001$; P: 1375 ± 95 Hz; S: 967 ± 95 Hz), and produced more high frequency calls than S piglets ($P = 0.0157$; S: 0.44 ± 0.05 high calls/sec; P: 0.25 ± 0.05 high calls/sec). Piglets on day 1 produced more high frequency calls than those on day 3 ($P = 0.0467$; D1:

0.41 ± 0.05 high calls/sec; D3: 0.28 ± 0.05 high calls/sec). Immediately after treatment, P piglets did not differ from S piglets in time spent suckling, lying and standing. However, P piglets jammed their tail between their legs more than S or C piglets ($P = 0.0005$; C: 12.3 ± 3.3% of scans with tail jammed; S: 14.3 ± 3.3%; P: 29.7 ± 3.3). Day 1 piglets trembled significantly more than day 3 piglets ($P = 0.0005$; D1: 12.2 ± 1.8% of scans with piglet trembling; D3: 3.0 ± 1.8%), and this was exacerbated by processing ($P = 0.076$; P on D1: 17.7 ± 3.1%; all other piglets: 5.6 ± 3.1%). There was no effect of treatment or day of treatment on suckling behaviour through four days of age.

Average birth weight of the experimental piglets was 1.47 ± 0.03 kg. Piglets weighed 2.26 ± 0.06 kg at 5 days of age and 4.75 ± 0.13 kg at 14 days of age. Piglets gained an average of 235 ± 9 g/day. There was no difference in weights or growth rates between processing treatments or day of treatment, or any effect of treatment or day on piglet mortality. IgG concentrations were significantly affected by day of treatment ($P = 0.0183$; D1: 31.0 ± 2.0 mg/mL; D3: 26.4 ± 1.6 mg/mL), and had a tendency to be affected by treatment ($P = 0.09$; C: 30.0 ± 2.3 mg/mL; P: 25.8 ± 1.8 mg/mL; S: 30.4 ± 2.5). There was no effect of treatment or day of treatment on IGF-I or IgA concentrations.

Tail docking and ear notching appears to cause some acute pain and distress to newborn piglets, resulting in changes to vocalizations and behavior above handling alone. However, in our study, these procedures did not have any detrimental effect on suckling behavior or growth, and results from endocrine and immunological measures are equivocal. In addition, there doesn't appear to be any concrete evidence that processing piglets on day 1 is better or worse than on day 3. Further studies are needed to examine ways to reduce the pain and distress caused by these routine management procedures.

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