

THE IMPACT OF FLOOR IN FARROWING PENS ON LIMB INJURY IN PIGLETS

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Abstract

The skin abrasion and subsequent infection of wounds and joints are very frequent in piglets in farrowing pens on commercial farms. The disinfectant with glycerine content used after farrowing created oil film on plastic grates and piglets slid back on this smooth surface. The reduction of thoracic limbs injury was noted after deletion of disinfection ($P < 0.01$). Covering of slippery grates by plastic matting caused a significant reduction of injury of thoracic and pelvic limbs ($P < 0.01$).

Key Words: Piglet, limb injury, floor, disinfection

The skin abrasion of limbs often causes impaired locomotion of piglets and it is also gateway for infection which is demonstrated in laminitis, arthritis and sepsis. Especially the skin of newborn piglets is soft, moist and susceptible to injury and bacterial colonization. Skin lesions on limbs of newborn piglets are very often the results of contact with floor of farrowing pen. According Mouttotou and Green (1992) there is relationship between the time spent with suckling and resting on the floor and the occurrence of skin abrasions in one week old piglets. Limbs injuries in piglets include abrasions, wounds and skin necrosis (Mouttotou et al., 1999). The abrasions of carpal joints, galls of ulna, eventually suffusions occur the most frequently. The most of lesions cause only problems with locomotion but they can be gateway for bacteria from outside environment to organism and they also can cause infection. Pathogenic streptococci penetrate through the injury into the bloodstream and cause arthritis, endocarditis or meningitis in target tissues.

The source of infection for piglets can be sows which are infected with pathogenic streptococci (Windsor, 1978). Skin affection start with scratches and cracks on limbs which can be detected shortly after the birth, 98 % of three days old piglets is affected and most of these lesions can be healed during three weeks (Svendson et al., 1976; Furniss et al., 1986). The bacteremia and following arthritis occur after penetration of pathogenic streptococci into bloodstream. Arthritis decreases moveability of piglets, it also has a negative impact on growth ability (Zoric et al., 2003). Early therapeutic treatment shortens the period of illness and reduces mortality but it does not solve the risk factors connecting with technology failures (Zoric et al., 2004). This problem is still actual in our pig herds and stables.

Material and Methods

The experiment was carried out in commercial performance herd with cyclic system. The sows were

housed in rebuilt stables and farrowing pens were equipped with grate floors. The monitoring of limb injuries and following arthritis, laminitis and high piglet mortality was done after their first mass occurrence in the herd. The influence of technological equipment on the limb injuries was examined. The piglets from the birth to the age of 11 days were examined and the number of piglets with and without limb injuries and galls was monitored. The samples from stricken skin, synovial fluid of joints and from the surface of floor grates were collected. The agent of affection, dynamic of infection process and preventive measure were specified (Bednář et al., 2006). The using of disinfection preparation after farrowing was detected during the analysis of technological processes in the stables. The preparation with a high content of glycerine was used. Glycerine has oily form and it increases slipperiness of floors. There were differences between new and old grates in farrowing pens. The old grates (they were used for a long time) were glossy compared to new grates. But on closer investigation the old grates had small cracks with sharp edges. We recommended changing old grates in farrowing pens and removing all grates from the space where piglets spent time during suckling. For examination of the effect of non-grates floor the space around sow teats were covered with plastic matting. The statistical program QCExpert 2.7 was used for statistical evaluation of obtained data.

Results

The first treatment in farrowing pens was the deletion of disinfection after farrowing (Table 1). It has a positive influence on the most of monitored parameters. The elimination of number of piglets with traumatic injury of thoracic limbs was statistically significant ($P < 0.05$). The positive tendency towards the reduction of galls was also found. The number of piglets without injury was increased. The percentage of piglets with injury on pelvic limbs was not affected ($P > 0.05$).

On the basis of our results it is possible to conclude that the deletion of oily form of disinfection after farrowing reduces the slipperiness of floor and piglets can move more safely without risk of slipping. But injuries occurred on hind limbs. They were caused by edges of grates during suckling. The comparison of no disinfected (without oil form of disinfection) old and new grates and grates partially covered with plastic matting is illustrated

in Table 2. The significantly ($P < 0.01$) lower occurrence of piglets with traumatic injury of anterior and pelvic limbs was found in stables where the grates were partially covered with matting. But significantly higher occurrence of galls was found in this group. It can be caused by using plastic matting for covering the grates. The matting was slippery due to water, urine and faeces. But it could be preferable to use new plastic floor parts instead of grates.

Table 1. Effect of oily disinfection solution on limb injuries in piglets

	With disinfectant	Without disinfectant	Index
Number of monitored litters	53	36	
Traumatic injury of thoracic limbs (%)	69.51 ^a	49.81 ^b	71.66
Traumatic injury of pelvic limbs (%)	87.13	85.89	98.58
Lesions on limbs (%)	27.77	13.71	49.37

Values in the same row with different superscripts are significantly different (a, b $P \leq 0.05$; A,B $P < 0.01$).

Table 2. Effect of old grates (A), new grates (B) and covering of grates in space for suckling piglets with plastic matting (C) on limb injuries

	A	B	C
Number of monitored litters	18	16	8
Traumatic injury of thoracic limbs (%)	49.81 ^A	36.20 ^A	6.63 ^B
Traumatic injury of pelvic limbs (%)	85.89 ^A	94.47 ^A	43.94 ^B
Lesions on limbs (%)	13.71 ^A	25.16 ^a	74.34 ^{Bb}

Values in the same row with different superscripts are significantly different (a, b $P \leq 0.05$; A,B $P < 0.01$).

Conclusion

The records illustrate that the disinfection used in farrowing pens immediately after farrowing should be chosen not only in reference to its efficiency but also in reference to its physical properties. The oily preparation increased slipperiness of floor and risk of galls and limb injuries in our experiment. The covering of grates in the places where piglets are during suckling was the most effective preventive measure.

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