

Foster Mother Behaviour in Andaman Local Pig

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Abstract

Movement of piglet from its own natural mother to another sow to suckle and survive is called as fostering or cross-fostering (CF) and that another sow is called as foster mother. Compared to other domestic species, porcine species is very tolerant of foreign young. An Andaman local pig aged 2 years had shown this behaviour. This fostering behaviour by Andaman local pigs has not been reported earlier.

Keywords: Foster, Andaman local pig

Introduction

Foster mothering or cross-mothering behaviour is movement of piglets from its own natural biological mother to another sow to suckle and survive. Compared to other domestic animal species, porcine is very tolerant of foreign young. Fostering pigs at birth between sows is an important procedure in reducing piglet mortality. Reasons to adopt foster mother are too many piglets, variable birth weight, weak or poor viability piglets, mastitis-metritis-agalactia syndrome or diseases in the sow, savaging, delayed weaning, starved piglets and death of a mother sow at the time of farrowing. Fostering is not only beneficial, but also significant risks associated with the procedure. Fostering pigs will transfer the pathogens throughout to the newly created litter (Kindergarten-effect); foster sow may refuse to allow the fostered piglets to suckle and may become aggressive towards them; the fostered piglets will be more passive and will show less massaging behaviour of the sow's udder as a result, milk production of the sow will be reduced and milk congestion may develop and milk congestion may lead to a premature heat of sow which should be categorized as 'irregular return to oestrus'. Irregular return to oestrus will leads to poor fertility rate, poor litter size and higher mortality rate. Present communication describes about the case report of foster mothering behaviour in Andaman local pigs and has not been reported earlier.

Case presentation and discussion

An Andaman local sow aged 2 years was observed to foster the piglets of another mother along with its own

piglets. Piglet movement from one to another sow is known as fostering and the sow is called as foster sow, is frequently occurred when the number of piglets is higher than teat number and the sow does not have rearing ability. Circumstances such as sow illness or death or piglets fail to thrive on their birth sow create the condition to relocate the piglets. Sows recognise their own piglets by olfactory cues and may accept, reject or even kill alien piglets (Algers and Uvnäs-Moberg, 2007). Although sows can accept alien offspring quite well (Dellmeier and Friend, 1991), however, foster mothers are more aggressive toward the fostered piglets than their own offspring when cross-fostering is performed all through the lactation (Horrell and Bennett, 1981, Price *et al.*, 1994), except for the first day after farrowing (Robert and Martineau, 2001). Risk of mortality is high when piglet numbers exceed the sow rearing ability and so fostering is widely adopted across pig industries. The process assists in re-homing excess piglets that are associated with increased sow prolificacy, in relation to available functional teats (Heim *et al.*, 2012). It can also be used to ensure the litter uniformity, reducing weaning weight variability and subsequent impacts on slaughter management (Quesnel *et al.*, 2008). Piglet movement does not success without some cost. A change in environment, littermates and sow can prove to be of a detriment for a fostered piglet and can also upset the litter on to which it is relocated and fostered.

Fostering success is also varied with sex of the piglets. Sow takes care more time on sons than daughters (Baxter *et al.*, 2012). However, female piglets have higher

survival rates than males (Bereskin *et al.*, 1973) and this may be further higher in castrated males (McGlone *et al.*, 1993). More specifically, male piglets have higher incidence of crushings, disease related mortality and impaired thermoregulation (Baxter *et al.*, 2012). Females also grow faster than males and this is especially true during transition times such as weaning (Dunshea, 2001). Logically, if female piglets have an improved chance of survival and grow faster in times of stress, female fostered pigs may outperform than the male fostered pigs. Traditionally, older piglets with impaired growth were shown to display improved growth when removed from their litter and fostered to a younger, similarly sized litter (Cutler *et al.*, 1992). This will now be referred to as "cross-fostering". Several studies have reported negative associations with excessive cross-fostering of piglets including disruption to nursing episodes, increased fighting between piglets at nursing resulting into more injuries, affecting growth rates of both resident and fostered piglets (Robert and Martineau, 2001). Alterations in the maternal behaviours of foster sows have also been noted, with increased aggression towards piglets and fewer milk let-down events when cross-fostering occurs throughout lactation (Robert and Martineau, 2001).

The effect of continual cross-fostering on growth impairment is most prominent at weaning with reports of up to a 25% reduction in weaning weight when compared to those with no movement after 24 h (Straw, 1997). Cross-fostering is a management technique used in up to 98% of commercial pig farms (Straw *et al.*, 1998) to increase piglet survival and to create litters with more uniform body weight (Wattanaphansak *et al.*, 2002). It is recommended that CF is kept to a minimum as it can be stressful for sows and piglets (Baxter *et al.*, 2013). Furthermore, if CF is required it should be performed as early as possible (12–24 h after farrowing) as the teat order is not established at this time (Heim *et al.*, 2012). CF practiced in this way can reduce pre-weaning mortality; it does not negatively affect growth performance and may not affect piglet behavior as the CF animals adapt to their new environment relatively easily (Robert and Martineau, 2001). However, recent studies reported associations between CF and the presence of tail lesions (Moinard *et*

al., 2003) and a greater risk of disease such as pericarditis and greater risk of heart condemnations at slaughter (Calderón Díaz *et al.*, 2017).

Late CF means that piglets are introduced to litters in which the teat order is already established which could be stressful and have a detrimental effect on survival, growth performance and behavior of both CF and resident piglets (Robert and Martineau, 2001). Late CF piglets are also less likely to be present at milk letdown and they show signs of distress (Price *et al.*, 1994). The latter is evidenced by more wandering around the pen, frequent vocalizations and performance of escape attempts (Price *et al.*, 1994). Further, late CF increases fighting (Horrell, 1982) and the greater number of face and body scratches in such pigs suggest that they are the receivers of aggression (Robert and Martineau 2001). Late CF also seems to impair growth performance as late CF piglets have lower BW gains than non-CF pigs (Robert and Martineau, 2001, Horrell, 1982). Cross-fostering was associated with a higher risk of death during lactation as well as during the entire production cycle. Early CF was associated with a higher likelihood of having ear lesions and no differences were observed between CF weeks in the likelihood of having body or tail lesions. Even though performance did not differ between CF weeks, late CF was associated with lower carcass weight and less carcass muscle depth.

Previous studies reported that limiting cross-fostering up to 2–3 days after farrowing has limited adverse effects on growth performance (Van Erp-Van Der Kooij *et al.*, 2003) whereas cross-fostering 1 week after farrowing impaired weight gain (Robert and Martineau, 2001). Nonetheless, cross-fostering is also associated with parameters such as sow parity and birth BW all of which are also associated with growth performance (Calderón Díaz *et al.*, 2017). Differences in these parameters were found between cross-fostering weeks. The same authors reported that Longissimus muscle area was 5.8 cm² greater and estimated carcass muscle % was 4.2% higher in non-CF runts compared with CF runts. Late cross-fostering increases fights during suckling as pigs compete to gain access to a specific teat and Robert and Martineau (2001) observed a high number of body and face lesions in cross-fostered pigs at days 1, 7, 13, and 16 of lactation. Fights

in young piglets (i.e., <20 days of age) are less than 5 min long and lesions are relatively mild (Pitts *et al.*, 2000). Thus, it is probable that any lesion resulting from fighting had already healed at weaning.

Additionally, since most fighting during lactation between non-CF and CF piglets occurs during suckling (Robert and Martineau, 2001), the lack of body lesions at weaning could be interpreted as a sign of conflict resolution once the new teat order was established. No difference in the likelihood of having body lesions was observed between CF weeks during subsequent production stages. However, this does not mean that fighting did not occur or that body lesions were not present during the production cycle. Moinard *et al.* (2003) found a higher incidence of tail lesions on farms where CF was practiced. Mixing of unfamiliar pigs disrupts social group stability increasing stress levels (Arey and Edwards, 1998). Stress can contribute to tail biting behavior (Schröder-Petersen and Simonsen, 2001) although it is unknown if stress predisposes a pig to become an initiator or a recipient of such abnormal behavior.

Cross-fostering within the first week of life indirectly pre-disposes pigs to ear lesions and this could be mediated by stresses inherent to cross-fostering which include separation from their own mother, handling, re-mixing with unfamiliar piglets and the associated fighting. Severe stress on piglets in the perinatal period makes them more stress-susceptible later in life (Olsson *et al.*, 1999). Hence it is possible that cross-fostering when the piglets were very young represented such a severe stress that their immune function was compromised to the extent that they were more predisposed to ear lesions. It is suggested that cross-fostering should be minimized in line with previous recommendations (Heim *et al.*, 2012); only early cross-fostering should be applied. Early cross-fostering was performed on piglets coming from larger litters with similar birth weights as non-cross fostered pigs and no negative effects on carcass yield were observed. Late cross-fostering was performed in low birth weight piglets; however, such small piglets are likely to continue to grow at a slower rate (Calderón Díaz *et al.*, 2017).

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