

FOETAL MUMMIFICATION IN PIG - A CASE REPORT

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ABSTRACT

Foetal mummification is a common condition in swine. A four year old Large White Yorkshire sow gave birth to one mummified foetus along with 7 normal live foetuses in 4th parity.

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INTRODUCTION

Foetal mummification is one of the important gestational disorders in domestic species especially in polytocous species like swine exhibit a higher incidence of mummification and is happened with intrauterine death of the foetus followed by resorption of the fluids of amnion, allantois and foetus. The dried and shrivelled foetal membranes become closely applied to the dessicated foetus lacked eyeballs and soft muscle tissue due to absorption of the subcutaneous layer and deep red chocolate colour pigmentation. This condition is precipitated by dead foetus along with foetal

debris remains in the uterus of the dam beyond the gestation period (Vikram *et al.*, 2020). The breed and history of the previous incidence are considered to be risk factors for higher incidence. The Brazilian swine herds and French herds exhibited a prevalence of 3.45 % and 3.9 %, respectively (Le Cozler *et al.*, 2002; Borges *et al.*, 2005). The incidental value of mummification between 1.9 and 5.7 per cent was observed in sows by Schneider *et al.* (2012) and 6.8 per cent in gilts (Van de Lande and Van Rens, 2003).

Case description

A four year old Large White Yorkshire sow delivered a mummified foetus (Fig.1) and followed by delivery of 4 female and 3 male normal piglets with a total farrowing duration of 3 hours. The farrowing process was assisted and monitored under standard management practices.

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Discussion

The foetal mummification is commonly observed in pigs as compared to other domestic species due to large litter size. Generally, in an average litter size, the presence of one mummified foetus indicates a physiological death caused by environmental conditions like drought (deserts), oxygen depletion (peat bogs), and ice (glaciers). The foetus appears dry, stiff foetoplacental unit with no exudate also called as papyraceous mummification, a frequently encountered condition in pigs (Chinchkar and Hukeri, 1992). It is a major cause for the prenatal foetal loss in swine whereas the presence of multiple mummified foetus raises suspicion of an infectious cause of reproductive failure (Sims and Glastonbury, 1996). Foetal mummification also linked with parity, litter size, uterine capacity, temperature of the environment, presence of mycotoxins and infectious cause (Van de Lande and Van Rens, 2003).

Pigs with larger litter size (more than 12 piglets/farrowing) had a 14.5 fold higher incidence of foetal mummification than with smaller litter size of less than ten piglets ($p < 0.05$) which is likely precipitated by uterine space influenced by foetal growth rate leads to foetal death and eventually mummification during last trimester of gestation (Borges *et al.*, 2005). The probability of foetal mummification with average litter size, birth weight and parity of sows is associated with a failure to maintain a favourable environment for foetal growth and survival in the uterus (Wu *et al.*, 1988; Le Cozler *et al.*, 2002).

The uterine contracts and moulds it into a dry contorted mass (Arthur *et al.*, 1989). It is a sequel of foetal death without abortion, often after ossification on bones, and without resorption of the fetus. High prolificacy inheritable trait of pig is associated with higher incidence of stillbirths and mummified foetuses (Rosend *et al.*, 2007).

The presence of one mummified foetus in normal litter may indicate physiological death is related to poor management, deficiency of energy and protein and infectious disease (Lefebvre, 2015) and the presence of multiple mummified foetuses raises the suspicion of an infectious origin such as Porcine Parvovirus (PPV) and Porcine Reproductive and Respiratory Syndrome Virus (PRRSV).

The number of mummified foetuses relative to litter size and foetal age at which death occurs is an indication of the potential etiologic agent. If the death of the foetus was due to insufficient space or a large litter, (eg. One mummy with 14 live piglets) or an infectious agent, the litter size will be normal, but more mummified foetuses and less live piglets will be observed (eg. Litter size of 12 with six live piglets, two dead piglets and four mummified foetuses). If mummies are of the same size, mycotoxins should be considered as a possible cause.

When the infection occurs early stage (< 40 days) of gestation, PPV causes absorption of the infected foetuses, and the dam return to estrus in a regular (18 -24 days after heat) or irregular (25-38 days after heat)

manner or fails to farrow. If infection occurs between 40 and 70 days of pregnancy, foetuses become infected sequentially, resulting in mummification of foetuses in different sizes at birth, alongside the healthy piglets (Roberts, 1971). If infected after 70 days of pregnancy, immunocompetent foetuses respond to PPV leads to very little or no evidence of infection other than the reduced number of healthy piglets and mummification and in such a situation, the economic loss is generally not significant in most of the farms.

CONCLUSION

The proper housing system, proper care in the form of optimal nutrition, stress management, rigorous sanitary protocols, and vaccination against PPV and PRRSV are of farthest importance to prevent the occurrence of mummified foetus and ultimate loss of foetus in pig production.

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Fig. 1. Foetal mummification in pig