The influence of feeding levels before and after 10 weeks of age on osteochondrosis in growing gilts

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Background

Osteochondrosis (OC) is a disturbance in the ossification process (conversion of cartilage to bone tissue) in growth cartilage of young animals (see Figures 1 – 3) and is one of the reasons for lameness and premature culling in sows. Breeding gilts will last several parities in practice. Reducing OC prevalence in these animals could increase welfare and longevity. Feeding levels at a young age influence bodyweight and may in turn affect and reduce OC development.

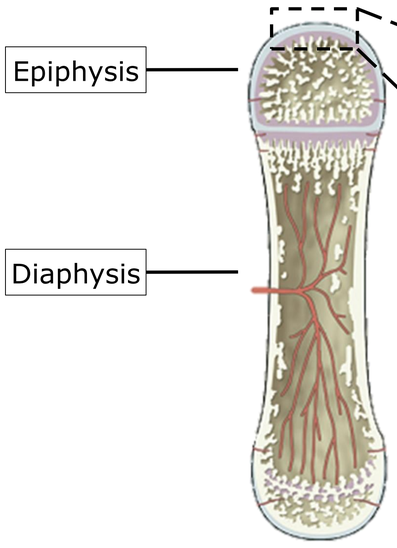

Fig. 1. Representation of a long bone. Bone growth occurs in growth cartilage, where cartilage cells regulate the ossification process.

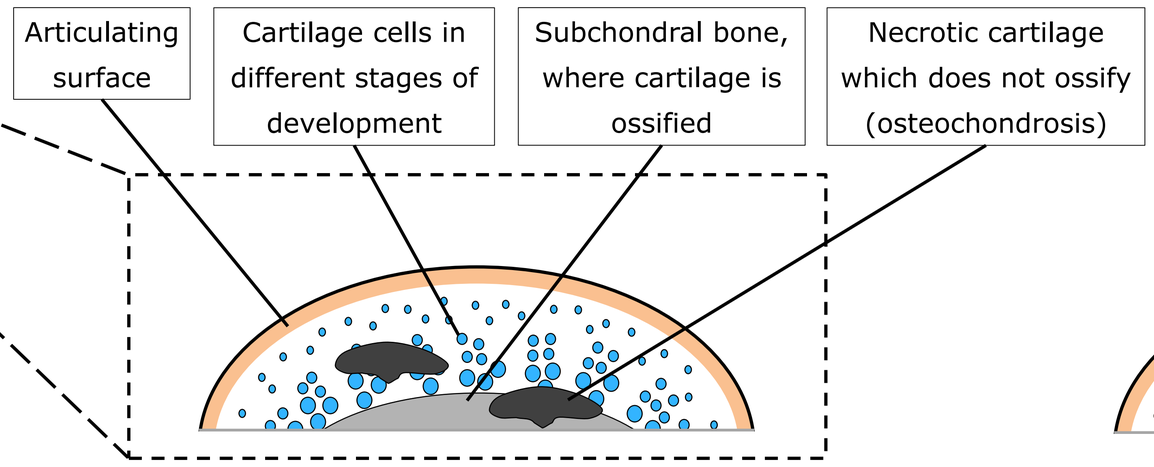

Fig. 2. Representation of growth cartilage situated between the joint surface and subchondral bone. A susceptible timeframe for OC development in pigs is between 7 and 13 weeks of age.

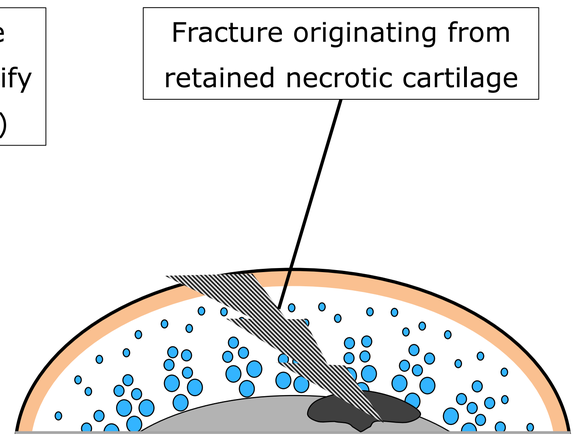

Fig. 3. Necrotic cartilage may fracture due to joint loading influenced by bodyweight. This leads to lesions and / or bone fragments on the joint surface, which can lead to lameness and reduced longevity in sows.

Objective

To investigate age dependent effects of feeding levels on OC prevalence in growing gilts (Dutch Large White x Dutch Landrace).

Methods

- Start after weaning age (4 weeks of age).

A = *Ad libitum* (A)
R = Restricted (R; 80% *ad libitum*)

Treatment	AA	AR	RA	RR
	n = 53	n = 53	n = 53	n = 52
4 – 10 weeks of age	A	A	R	R
10 – 26 weeks of age	A	R	A	R

- A switch of feed level at 10 weeks of age; within a susceptible timeframe for OC development (7 to 13 weeks of age).
- Gilts slaughtered at 26 weeks of age.
- Elbow joint, knee joint, and hock joint assessed for joint surface irregularities indicative of OC.

Results

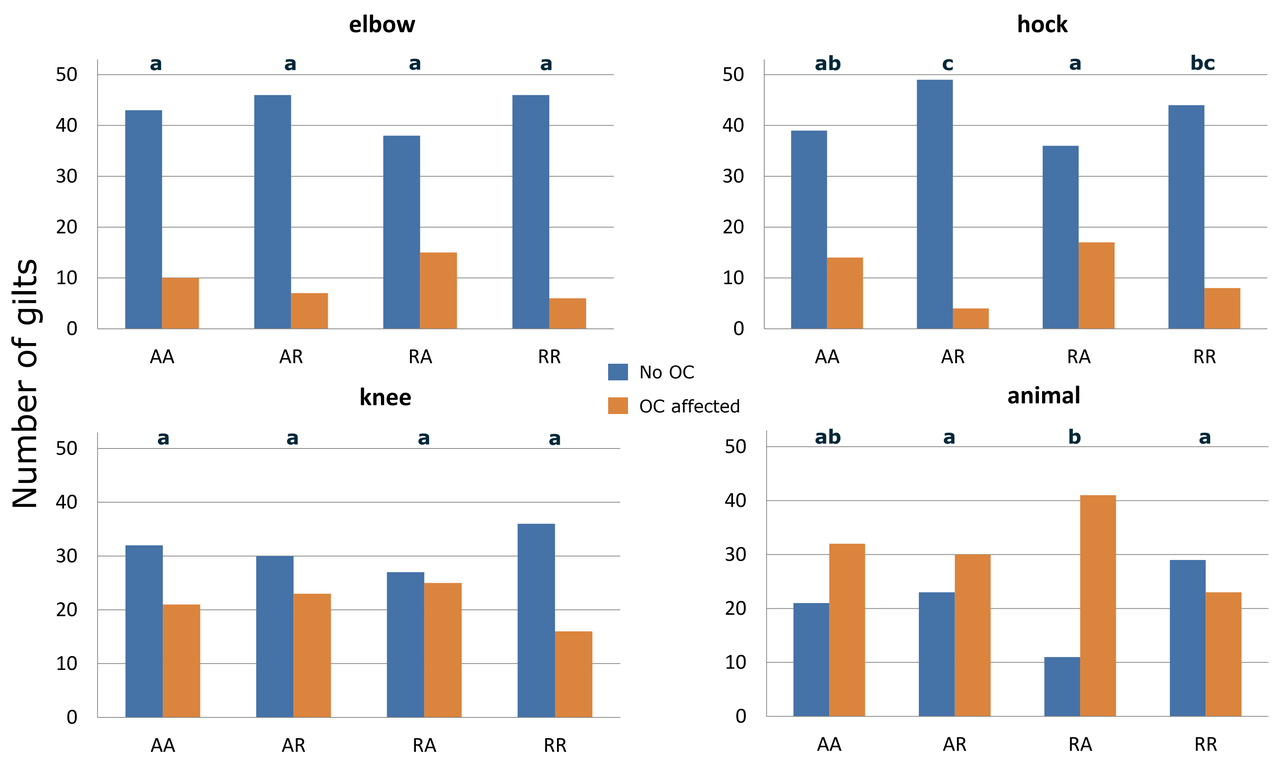

Fig. 4. Number of gilts affected with OC in the elbow joint, hock joint, knee joint, and at animal level. Animal level is number of gilts affected with OC taking all joints into account. Dissimilar letters between treatments above bars indicate significant differences ($P < 0.05$).

Conclusions

- Gilts in the RA treatment have significantly higher odds to be affected with OC than gilts in the RR and AR treatments in the hock joint and on animal level.
- The results indicate that feeding levels have an age dependent effect on the prevalence of OC in gilts and could be used to reduce OC prevalence in practice.

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