



Different regrouping schedules in semi group-housed rabbit does: effects on agonistic behaviour, stress and lesions

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Key words

Agonistic interactions, lesions, semi-group housing, reproduction, stress, hormones

Aim of the study

This study was performed to identify if a later grouping at 18, resp. 22 days postpartum (dpp) in the Swiss semi-group housing system of does, instead of the currently grouping at 12 dpp, would (i) decrease the level of agonistic interactions and associated lesions, (ii) cause less stress to the animals and therefore produce better reproductive & production results (higher fertility rate & body condition, lower mortality rate of does), (iii) cause higher growth rates and better survival of kits, because they spent more time in close proximity to their mother, with less risk of malnourishment and abandonment. Additionally we investigated the hormonal development in pregnant-lactating does (progesterone, estradiol and testosterone) and its relation to the agonistic behaviour.

Material and methods

The study was conducted on a commercial Swiss rabbit-breeding farm using 57 multiparous does of the Hycole hybrid. It was performed in five consecutive trials from September 2018 until March 2019. The does were kept in groups of eight per pen according to a Swiss label program for animal-friendly housing. During the phase of grouping, the does had access to a shared area in the pen. The does were artificially inseminated (AI) on 10 dpp (days postpartum). Afterwards, three different treatments were applied: the first group was grouped at 12 dpp (TG12), the second one at 18 dpp (TG18) and the third one at 22 dpp (TG22). Initially, groups were randomly allocated to treatments. After the first trial, each group switched to another treatment in the following trial in a randomized way.

Lesions were assessed individually for each animal 6 days after regrouping. For scoring, we used a tagged visual analogue scale. The agonistic behaviour was coded during the first 2 hours after regrouping and during 3-5 a.m. the next day via video recordings. The scoring persons for lesions and behaviour were blinded to the treatments. Body temperature, serving as a stress indicator, was documented throughout an entire trial on one animal per treatment group via an implanted RFID chip and a reading device next to the feeder. The ano-genital distance (AGD) of all the does was measured because it has been correlated with the aggressiveness and testosterone concentrations of does. One to two focal animals per treatment x trial combination were randomly chosen for blood collection to obtain the hormonal profile of pregnant-lactating does. As a refinement method, we used reduviid blood-sucking bugs (*Dipetalogaster maxima*).

Results and significance

The fertility rate after insemination was low in all three treatment groups with an average of 40.9 %. There was no treatment effect. The survival rate of kits was also not influenced by the applied treatments. The weight of neither the kits, nor the does was influenced by the treatment. The number of lesions between the treatment groups varied strongly depending on the trial. Thus, in contrast to our hypothesis, the animals in TG22 showed significantly more lesions than animals in TG12 during the first trial. In the second and third trials however, TG12 had significantly more lesions compared to TG18 and TG22. In the fourth trial, TG18 had a higher injury rate than TG22. In trial 5 there were again more lesions in TG12 compared to TG22. In general, there were fewer lesions in the trials during November-March than in the trials during August-October. Altogether only 17.8 % (N = 18) of the does were without lesions. Overall, about half of the agonistic interactions took place in the own nest of the initiating animal (48.5%). The number of agonistic interactions an animal started was weakly correlated with its

number of lesions and, like the lesions; it depended on an interaction between trial and treatment. The AGD was not correlated to the number of agonistic interactions. Body temperatures before and after regrouping did not differ in any of the treatments, however body temperatures increased after AI. All estradiol concentrations fell below the limit of quantification as well as below the limit of detection. There were no significant differences between the concentrations of testosterone nor progesterone levels between the 3 groups and neither of them was positively correlated to the agonistic behaviour. The AGD was not correlated with the obtained P4 levels. It was weakly positively correlated with T levels, but this correlation was not significant ($r = 0.36$, $p = 0.3$). This study showed that prolonging single housing after day 12 pp in semi-group housing reduced aggressive interactions and lesions in some trials but failed to do so in others. Besides the identity and composition of the group, the season seemed to be relevant for the extent of agonistic interactions. Contrary to expectations, no elevated stress levels were detected after regrouping. The delay of 6 or 10 days before grouping did not improve the breeding or productive success of does and their kits. Testosterone levels showed little variation across the pregnant-lactating phase, corresponding to results from pregnant-only rabbit studies. The agonistic behaviour was not correlated with the respective hormonal concentrations. In conclusion, the time point of grouping does after AI had only a weak influence on aggression and lesions and the hormonal profile did not indicate an optimum time for grouping.

Publications, posters and presentations

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