The effects of analgesia and local anaesthesia on blood cortisol concentration during surgical castration in male piglets

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Objective

✔ According to regulations, the majority of male piglets are surgically castrated without anaesthesia in Hungary, during the first week of life.
✔ Castration without anaesthesia is a source of intense pain that impairs welfare.
✔ Our aim was to measure the effects of using analgesia and local anaesthesia during castration on the blood cortisol level and body weight (BW) gain in male piglets.

Material and methods

✔ Four groups of 3-5 day old male piglets (Hungarian Large White) were formed as follows:
1. Control group (CO; n = 49)
   The control piglets were castrated without anaesthesia or analgesia, according to the law in operation.
2. Meloxicam group (ME; n = 50)
   The piglets received 0.4 mg/BW kg Meloxicam (Melovem, Dopharma International, The Netherlands) i.m. 10 minutes prior to castration.
3. Meloxicam and Minocain group (MEMI; n = 50)
   The piglets were treated with the same amount of Meloxicam as written in the ME group, 10 minutes prior to the castration. Additionally, Procain (0.5 ml 2%, Minocain 2% inj., Kon-Pharma GmbH, Hannover, Germany) was injected into the testes as local anaesthesia 2 minutes prior to the castration.
4. Group with two Meloxicam (MEME; n = 48)
   The piglets received the same amount of Meloxicam as in the ME group 10 minutes prior to and 6 hours after the castration.

✔ Blood samples were taken from the jugular vein prior to castration or the first shots of Meloxicam and 40 minutes after the castration.
✔ Blood cortisol concentration was measured by RIA according to the method of Csernus (1982).
✔ The body weight (BW) of the piglets was measured prior to the castration, and then weekly until weaning (28 days).

Results

✔ We found that the blood cortisol concentrations were elevated after the operation, suggesting that stress was experienced during the procedure (Figure 1).
✔ There was no difference in the post-operative cortisol concentrations between any of the groups (Figure 1).
✔ Regarding the BW gain, we found no difference between the groups (Figure 2), though the initial BW of piglets in the MEMI group was significantly lower compared to the other groups.

Conclusions

✔ Castration is a stressor.
✔ The efficiency of local anaesthesia and/or analgesia in reducing stress was not proven in the present study.

Figure 1. The blood cortisol concentrations prior to and after castration

![Figure 1](image1.png)

Figure 2. Body weight gain (g) and BW (g) at the time of weaning

![Figure 2](image2.png)