ABSTRACTS

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Feasibility of a different method of surgical sterilization

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OBJECTIVES AND METHODS: The occlusion of the ovarian irrigation has been described to sterilization of cows using a latex ring (1,2,3). The technique is rapid, without risk of hemorrhage, scarce complications and ovarian atrophy 45 days after surgery (1,4). In other species there is no study using this method to sterilization. Thus, the study aimed to evaluate the changes of ovary after occlusion of ovarian blood vessels from female rats, with clip titanium, in order to promote sterilization without ovariectomy. The vaginal cytology and ovarian histology were used to determine reproductive status. This study intends to be the first step for subsequent use of technique in dogs and cats. The study was approved by Brazilian Ethics Committee for Animal Experimentation (Federal Law n.11.794, October 8th, 2008). Fifty female Rattus norvegicus, strain Wistar, young adults were divided into five groups: group I (n = 15), was carried out bilateral ovariectomy and females were euthanized at 15 (n=5), 60 (n=5) and 90 (n=5) days; group II (n=5), opening and closing of abdominal cavity without any procedure, females were euthanized at the end of experiment, 90 days after surgery; group III (n=10), IV (n=10) and V (n=10), bilateral occlusion of ovary vessels with titanium clip and females were euthanized at 15, 60 and 90 days post-surgery, respectively; group VI (n=20), bilateral occlusion of ovary vessels with mononylon. The females are anesthetized with xylazine (5mg/kg), morphine (2.5mg/kg) and ketamine (50mg/kg), intraperitoneally. During and two days following surgery, all animals received enrofloxacin (10mg/Kg, SQ, q24hr) and meloxicam (0.2mg/Kg, SQ, q24hr). The females were euthanized using thiopental sodium (100mg/Kg, intraperitoneally). The vaginal cytology was performed every 24 hours, one week before surgery; subsequently, carried out once a week. Ovarian samples were fixed in formalin 10% and stained with hematoxylin/eosin to histological evaluation.

RESULTS: In second week after surgery, the females from group I were anestrus and group II no changes in estrous cycle were noted. The majority females from groups III, IV and V showed no macroscopic ovarian atrophy and several rats had normal estral cycle. In three and two animals from group IV and V no ovary were found, respectively. Group VI, only female presented normal estral cycle evaluated by vaginal cytology. Figure 1 showed material and techniques used in study. Histologically, in all groups, the uterus showed no pathological changes. The ovaries of the rats of group I and II showed no pathological changes. In group III, there was ovarian tissue with prominent ischemic changes and reduction component of the cortex and medulla. In addition, normal follicles and corpora lutea were found, though there was diffuse coagulation necrosis in some follicles and vacuolar degeneration, necrosis and apoptosis in granulosa and luteal cells. Sometimes, there was detachment of granulosa cells of the basal membrane. In the interstitial region, there was moderate hemorrhage, moderate edema and severe congestion. There was moderate proliferation of fibrovascular tissue in medullar and cortical area. Adjacent adipose tissue presented mononuclear infiltration and several giant cells. The changes in group IV and V were similar to group III. However, it was evident reduction of primordial, primary and secondary follicles and the amount of adjacent adipose tissue was found in greater quantities. Nineteen animals in group VI had ovarian tissue replacement by dense fibrous connective tissue slightly vascularized. However, in five these animals showed calcified follicles and corpora lutea, in six were also observed secondary follicles in degeneration and atresic follicles. One sample presented normal ovarian tissue. There was large amount of adjacent adipose tissue with mononuclear and giant cells infiltration and fibrovascular tissue.
CONCLUSION: The new method of sterilization is feasible, although other materials that occlude the ovarian irrigation should be studied, so the occlusion of vessels can be complete. The changes observed in the ovaries underwent ovariectomy (group II) were minimal and are related to the surgical procedure. The use of titanium clip, up to 90 days, did not cause atrophy or complete destruction of ovarian tissue, not being a reliable method for castration, probably due to lack of total occlusion of the clip (Figure 1). And the group 6, in which the animals were subjected to obstruction of the blood supply with yarn nylon, most animals had ovarian tissue replacement by fibrous tissue. This finding indicates that the methods of obstruction caused progressive ischemia and necrosis of the tissue, and can be considered a reliable method of sterilization without risk of hemorrhage because there is no tissue section.


