

Single Testicular Injection of Chlorhexidine Solution as Chemical Sterilant in Dogs

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An affordable and effective non-surgical technique for achieving male dog sterility is needed to resolve the problem of overpopulation in dogs. The efficacy of 5% chlorhexidine digluconate solution injected into the testicular parenchyma, as a method for chemical castration, was evaluated.

Forty-two dogs of mixed breed, 3.1 ± 1.5 y.o., 20 ± 3.5 kg body weight, with good clinical conditions and normal reproductive parameters, were lightly sedated and divided in two groups: A (n=21) treated with 2 ml of 5% chlorhexidine solution injected percutaneously into the dorsal cranial portion of both testes; B (n=21) injected with 1 ml of saline solution into the same portion. In all dogs testosterone was monitored weekly for 60 days.

At the end of the trial, a clinical and ultrasonographic examination of the genital tract, including libido and semen evaluation (CASA — Computer Assisted Sperm Analysis — system) was performed. The obtained data were analyzed using the ANOVA test. Ninety-six hours after injection, dogs of group A showed testicular tenderness and local tumefaction, which regressed within 15 days. At day 60, testicular ultrasonography revealed bilateral more dense nodular lesions; prostatic volume and parenchyma was normal; but reduction in libido occurred. Semen analysis showed azoospermia and a significant decrease (day 0vs60) in ejaculate (presperm and sperm-rich fractions) volume (5.8 ± 1.2 vs 2 ± 1.1 ml; $P < 0.01$).

In group B, there were no changes in libido, semen quality, testicular, epididymal and prostatic characteristics. Between groups (A vs. B), a significant difference ($P < 0.05$) was observed for testosterone serum levels. At day 60 a surgical castration was performed. Longitudinal sections of testes revealed an area of necrosis and fibrosis beside the epididymis extended to the tubuli seminiferi recti, rete testis and ductuli efferentes; histological examination showed degeneration of the seminiferous tubules associated with a significant alteration of the germinal epithelium cells. This could explain the decrease in the circulating levels of the testes-derived hormone observed between the two groups.

These findings are in agreement with those observed in our previous study, when chlorhexidine digluconate solution was injected into the cauda epididymis (Aiudi et al., 2007). A single percutaneous administration of 5% chlorhexidine digluconate solution into the testicular parenchyma has to be considered an effective non-surgical sterilization method, without local or systemic adverse effects.