SINGLE TESTICULAR INJECTION OF CHLORHEXIDINE SOLUTION AS CHEMICAL STERILIANT IN DOGS

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INTRODUCTION

Traditional neutering of companion animals has been accomplished through surgical methods of sterilization such as orchiectomy or deferentectomy. However, for understandable reasons, not all owners have their pets surgical sterilized. In addition, when considering feral dog populations, which permanent sterilization is desired, surgical methods can be too time consuming, expensive to be performed on a large-scale and present many adverse side effects (*Kutzler and Wood, 2006*).

Chemical castration is an alternative non-surgical approach to male dog contraception (*Fahim et al., 1993*). Chemical agents injected into the testis, epididymis or vas deferens cause infertility by inducing azoospermia in male animals. The technique is not technically challenging, inexpensive and suitable for large-scale sterilization programs. Intraepididymal injection of sclerosant agents induces azoospermia for a time period depending on the agent injected and its concentration (*Pineda et al., 1977; Aiudi et al., 2007*).

The aim of this trial is to evaluate the efficacy of 5% chlorhexidine solution injected in testis, as a method for dog chemical castration.

Photo 1. Testis Chlorexidine injection in the group A.

Photo 2. Ultrasonography evaluation of testis.

MATERIALS & METHODS

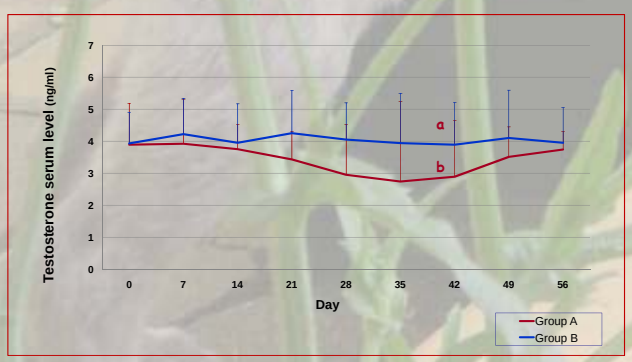
Forty-two dogs of mixed breed, 3.1±1.5 y.o., 20±3.5 kg body weight, with good clinical conditions and normal reproductive parameters (tab. 1), were lightly sedated and divided in two groups: A (n=21) treated with 2 ml of 5% chlorhexidine solution injected percutaneously into the dorsal cranial portion of both testes (photo 1); 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 (photo 2);, including libido and semen evaluation (CASA - Computer Assisted Sperm Analysis - system) was performed. The obtained data were analyzed using the ANOVA test.

Dogs	Total volume (ml)	Testicular fraction volume (ml)	Colour	pH	Concentration (10^6/ml)	Total motility (%)	Individual motility (%)	Vitality (%)	Normal morphology (%)
Group A	6 1.1	2.3 0.2	opaque	7.1	274 3	90	80	80	80
Group B	7 1.4	2.1 0.3	opaque	7.0	270 2	90	80	85	80

Tab. 1: Ejaculate evaluation in the two groups before the treatment.

Dogs	Total volume (ml)	Testicular fraction volume (ml)	Colour	pH	Concentration (10^6/ml)	Total motility (%)	Individual motility (%)	Vitality (%)	Normal morphology (%)
Group A	3 0.8 a	0	clear	6.8	/	/	/	/	/
Group B	6.9 1.3 b	2.2 0.4	opaque	7.0	262 4	90	80	85	80

Tab. 2: Ejaculate evaluation in the two groups after the treatment (a≠b, P<0,01).



Graphic 1: Testosterone levels (mean ± s.d.) in the treated dogs (a≠b, P<0,05).

RESULTS & DISCUSSION

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±1.2vs2±1.1 ml; P<0.01) (tab.2). In group B there were no changes in libido, semen quality, testicular, epididymal and prostatic characteristics. Between groups (AvsB) a significant difference (P<0.05) was observed for testosterone serum levels (grafhic 1). 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% chorhexidine digluconate solution into the testicular parenchyma has to be considered an effective non-surgical sterilization method, without local or systemic adverse effects.

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