Evaluation of intra-testicular injections of calcium chloride and 4-vinylcyclohexene 1,2 monoepoxide for chemical sterilization in guinea pigs

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Abstract

This study was aimed at investigating the use of intra-testicular calcium chloride (CaCl₂) and 4-vinylcyclohexene 1,2-monoepoxide (VCM) injections as a side effect-free alternative method for the control of reproduction in guinea pigs. Fifty male guinea pigs were randomly assigned to five groups. In all groups, the chemical agents were injected into both testes in 1% lidocaine hydrochloride. While Groups I, II and III were administered with a single dose (0.25 mL) of sterile physiological saline, 15 mg/100 g CaCl₂, and 240 mg/kg VCM, respectively, Group IV and V received a daily dose of 15 mg/100 g CaCl₂, and 240 mg/kg VCM for 3 days, respectively. On day 90 post-administration, all animals were weighed and later decapitated under ether anaesthesia. Blood and tissue (testis, liver, hypophysis and adrenal gland) samples were taken. Sperm samples from the cauda epididymis were examined for spermatological parameters. Blood was used for hormone analyses and tissue samples were examined histopathologically (haematoxylin-eosin) and immunohistochemically (Tunel staining). The epididymal sperm count decreased in all treatment groups. Excluding 2 animals, Group V displayed azoospermia. When compared to the control group, Group V displayed the highest prolactin and lowest testosterone levels, and Group III showed the highest testosterone level. Histopathological examination revealed no intoxication finding. Chemical castration with VCM may be a good alternative to surgical castration as it enables mass sterilization without postoperative risks in guinea pig.

Key words: calcium chloride, chemical castration, guinea pig, sperm, 4-vinylcyclohexene 1,2-monoepoxide

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