MOTILITY PARAMETERS OF EQUINE EPIDIDYMAL SPERMATOZOA AFTER 24 HOURS INTRA-EPIDIDYMAL EXPOSURE TO LIDOCAINE USING TWO COMMERCIAL EXTENDERS

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Abstract

Epididymal spermatozoa is the last source for gamete rescue in case of emergency castration or sudden death of a valuable stallion, thus an ideal harvesting and preservation technique should be employed. Routinely, 2% lidocaine intraparenchymatous administration is used to provide analgesia prior to castration, but studies on the effect of lidocaine on epididymal spermatozoa motility parameters are limited. The purpose of this study was to determine the effects of lidocaine on equine epididymal spermatozoa, after 24 hours intraepididymal cool storage using two commercial extenders. We hypothesized that intraepididymal prolonged exposure to lidocaine, might affect motility parameters of epididymal stallion spermatozoa and that different extenders might have an impact. Sperm was collected from 20 epididymides of routinely castrated 3 year old KWPN stallions. 4 stallions received 10 ml 2% lidocaine intraparenchymatous 10 minutes prior to castration and 6 stallions were not medicated. Testicles were transported to an equipped facility and cooled stored for 24 hours. From each sample an aliquot was diluted in a commercial egg yolk based extender, and another in a commercial extender containing defined milk proteins. Motility parameters were registered 30 minutes after dilution, computer assisted. There were no statistical differences between motility parameters of spermatozoa exposed to lidocaine and spermatozoa not exposed, however progressive motility and linearity significantly differed among the two extenders.

Keywords: *stallion, epididymal spermatozoa, lidocaine, commercial extenders, motility parameters*

Introduction

Regional analgesia by means of intraparenchymal 2% lidocaine administration during surgical procedures such as orchidectomy has proven to be effective in reducing pain during routine castration [1,2] or laparoscopic cryptorchidectomy in horses [3]. In one study, administration of 10 ml intraparenchymal 2% lidocaine did not decrease total motility (TM), progressive motility (PM), velocity of the average path (VAP), velocity of the curved line (VCL), linearity (LIN), normal morphology (M) and membrane integrity (MI) of the spermatozoa in vivo, even though relevant concentrations of lidocaine can be detected in epididymal flush, regardless of the blood barrier [4]. This is important in case of emergency castration of valuable stallions, when cryoconservation of cauda epididymis spermatozoa is the last chance to preserve genetic material. Even though viability of spermatozoa significantly decreases after 72 hours, they can be successfully cryopreserved and maintain their fertilization capacity in vitro, after 96 hours of intraepididymal storage at 4 degrees Celsius [5]. Chosing the best extender is crucial when dealing with epidydymal spermatozoa, due to the extremely limited quantity, and extenders can influence the motility parameters of refrigerated epididymal spermatozoa [6]. To the authors knowledge, there is no other study on the