ABSTRACTS

6th International Symposium on Canine and Feline Reproduction

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6th Biennial EVSSAR Congress

European Veterinary Society for Small Animal Reproduction

"Reproductive biology and medicine of domestic and exotic carnivores"

University of Veterinary Sciences
9th – 11th July 2008
Vienna, Austria

Editors: G. England, P. Concannon, S. Schäfer-Somi

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DEVELOPMENT OF AN ENDOSCOPIC TRANSCERVICAL NON-INVASIVE ARTIFICIAL INSEMINATION TECHNIQUE FOR LARGE FELIDS

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Introduction - Artificial insemination (AI) is expected to become a promising tool in wild felid conservation programs. Among the indications of this technique, we may find habitat fragmentation, risk of inbreeding depression in isolated populations and the use of frozen and/or chilled semen. In felids, partly due to teratospermia, much better results are obtained after AI when the semen is deposited directly inside the uterus (1). So far, AI in wild felids has mainly been tried in captive animals, using surgery - laparotomy or laparoscopy (1). However, such a surgical technique is too invasive to be used without any risk of postsurgical complications in wild animals living in the field. In order to develop a non-invasive AI technique, we adapted the endoscopic transcervical insemination technique used in domestic dogs (2).

Materials and methods - The trials were made on 8 females. 5 females were living in a zoo (Zoo du Mont Faron, 83 Toulon, France): one tigress (Panthera tigris), one lioness (Panthera leo), one leopard (Panthera pardus), one jaguar (Panthera onca) and one cheetah (Acinonyx jubatus). Trials were also attempted on 3 other cheetahs living in 3 different places. Heats were induced using eCG (Chronogest PM SG®. Intervet Inc. The Netherlands). Depending on the species, 100 to 1000 IU were injected IM according to the protocols described by Pelican et al. (3). 72 hours later, the animals were put under general anaesthesia with the following protocols (Cheetahs/Leopard: medetomidine (Domitor®) 40 to 100 μg/kg + ketamine (Ketamine Virbac®) 2.5 to 3 mg/kg. Lions/Jaguar: Tiletamine (Zoletil®) 1.5 mg/kg + 40 μg Detomidine (Domosedan®) 40 μg/kg. Tigress: Tiletamine (Zoletil®) 5 mg/kg). A human ureteral catheter (Neoplex®, Porges Ltd, France / Diameter 5 Fr) was optically guided through the cervix ostium up to the uterine horns inside a very thin rigid human uretero-rensoscope (length 34 cm / diameter 9.5 fr) without obturator (Karl Störz Inc., Germany) inserted inside the proximal vagina. In the tigress, the attempt was made with a dog urinary catheter (diameter 8 Fr) guided with a rigid cystouretroscope (+ sheath and obturator) used for domestic dogs (length 29 cm/ diameter 22 Fr. Karl Storz Ltd. Germany). In order to facilitate the visualisation of opening of the anterior vagina, air was insufflated using an automatic insufflator (Karl Störz Inc., Germany) or preferably a manual air pump. The video images were recorded with a portable computerised monitor (Telepack®, Karl Storz Ltd., Germany).

Results - Catheterisation of the uterine cervix was successful in 8/8 attempts. The duration of the entire procedure took between 3 to 26 minutes, around 10 minutes in average. Between the narrow proximal and the wider distal vagina, numerous folds of the vaginal mucosa were visualised in all females. In 2 cases (one jaguar and one cheetah), it was difficult to penetrate in the proximal vagina due to the difficulty in visualising the posterior part of this organ in the middle of these numerous vaginal folds.

Conclusion - Endoscopic transcervical technique may provide a non-invasive intra-uterine artificial insemination technique for large felids. The adaptation of this technique to smaller
wild cats has to be further studied. Of course, artificial inseminations using this technique remain to be performed. However, because habitat fragmentation is an important threat to the long term survival of large cat populations, this technique may be a very useful tool for virtually restoring connectivity among isolated and distant populations, hence reducing the risk of inbreeding depression.

References


Acknowledgements

The authors want to thank especially Mr Christophe Lecromps and Mr Ludovic Valente from Karl Storz company, France, for providing the endoscopic and monitoring equipment and for their technical assistance.