NON-SURGICAL CASTRATION IN CONTROLING LONG TAILED MACAQUE (*Macaca fascicularis)* POPULATION BY DEPARTMENT OF WILDLIFE AND NATIONAL PARKS (DWNP) PENINSULAR MALAYSIA

KARUPPANNAN K.V*, SAABAN S., FIRDAUS ARIFF A.R. AND MUSTAPA A.R.

Department of Wildlife and National Parks. KM 10, Jalan Cheras,56100 Kuala Lumpur

* Corresponding author. Tel: 03-90866800, Fax: 03-90752873, Email: kayalvizi@wildlife.gov.my

ABSTRACT. Intraepididymal injections method such as chemical castration applied to adult male long tailed macaques for their fertility control by Department Of Wildlife and National Parks (DWNP). Mixture of Ethanol-Formalin is used in this technique. This method does not require removal of the testis, easy to do and inexpensive. Successfully castrated specimen will show azoospermia. Suitable technique for large population like long tailed macaque.

Keyword: intraepididymal, azoospermia, chemical castration

INTRODUCTION

Animal populations vary naturally as a result of predator-prey and host-parasite relationships, but when the populations themselves, directly or indirectly, conflict with humans or their activities; fertility control becomes an acceptable method of population management compared with alternatives such as culling or poisoning (Oogjes,1997 and Jennifer *et al*., 2006).

Financial losses are incurred when species like long tailed macaques cause destruction of personal property (Artois, 1997 and Jennifer *et al*., 2006). The increasing population of this species leads to human- long tailed macaque conflict in many countries.

As ethical considerations and the concept of humane treatment of animals are becoming more prominent in shaping public attitudes toward what is acceptable in terms of controlling animal species, effective contraceptive methods are being sought as a potential solution (Cairns, 2004, Ooges, 1997, Kutzler and Wood, 2006 and Jennifer *et al*., 2006).

Intraepididymal injections method such as chemical castration is one of the non-surgical approaches to male contraception. Chemical agents injected into the epididymis or vas deferens cause infertility by induce blockage of the tubules in male animals which is permanent (Jochle, 1991 and Fayrer *et al*., 2000). The technique is not technically challenging, is inexpensive and suitable for large scale sterilization (Pineda and Dooley, 1984). Thus Department of Wildlife and National Parks (DWNP) choose this as an additional method in controlling long tailed macaque population in Peninsular Malaysia.

MATERIAL AND METHODS

a) Sampling

Samplings were done in Taman Tasik Perdana, Bukit Tunku and Bukit Nenas, Federal Territory in September 2010. We used macaque traps (8 ft × 8 ft × 8 ft) for sampling. We managed to trap 35 adult male individuals and all these specimens brought back to Conservation Ex-Situ Division for further procedure.

b) Chemical Castration

Ethanol-Formalin is used for an intraepididymal injection into the caudal or tail of the epididymis of long tailed macaques. A mixture of 30% formalin into of 99.9% ethanol with the ratio of ethanol: formalin is 9:1. The volume of chemical to one side of epididymis is 0.2 ml. One specimen of long tailed macaque requires 0.4 ml of chemical for sterilization. This method requires sedation and general anesthesia during the procedure (Immegart and Threlfall, 2000 and Bloomberg, 1996). All the macaque specimens were kept in cages for two weeks. Blockage of the tubules will complete in two weeks (Jennifer *et al*., 2006).

c) Electro Ejaculation Test

The effectiveness of this castration method was evaluated by well known electro ejaculation test after two weeks of castration process. This test was conducted by Departments Veterinary Officer. Lubricated rectal probe with three longitudinal electrodes inserted into the rectum.

The electrical stimulations were and each stimulation is applied so that it takes approximately 1 second to go from 0 V to the desired voltage, then stays for 2-3 seconds at the desired voltage followed by an abrupt return to 0 V where it stays for 2-3 seconds. The first series consists of 10 such stimuli at 2 V, then 10 at 3 V and finally 10 at 4 V. The specimen is then rested for 2-3 min. The next series consists of 10 stimuli at 3 V, 10 stimuli at 4 V and finally 10 at 5 V, and the macaque is again rested for 2-3 min.

Semen collected into a collection tube which has been placed over the glans penis (Julie *et al*., 2004).Semen smear stained with Eosin-Nigrosin observed at × 1000 magnification under immersion oil using bright or phase contrast microscopy.

RESULTS AND DISCUSSION

Thirty-two (32) out of thirty-five (35) macaques' specimens were showed absence of spermatozoa in semen sample as shown in Figure 1. This treatment induces oligospermia/azoospermia to the specimens. One advantage to this chemical is that the sexual drive remains intact. Therefore, sterile mating with females macaques results in pseudo-pregnancy and anestrous of the females.

Three (3) macaque individuals were failed to castrate with presence of

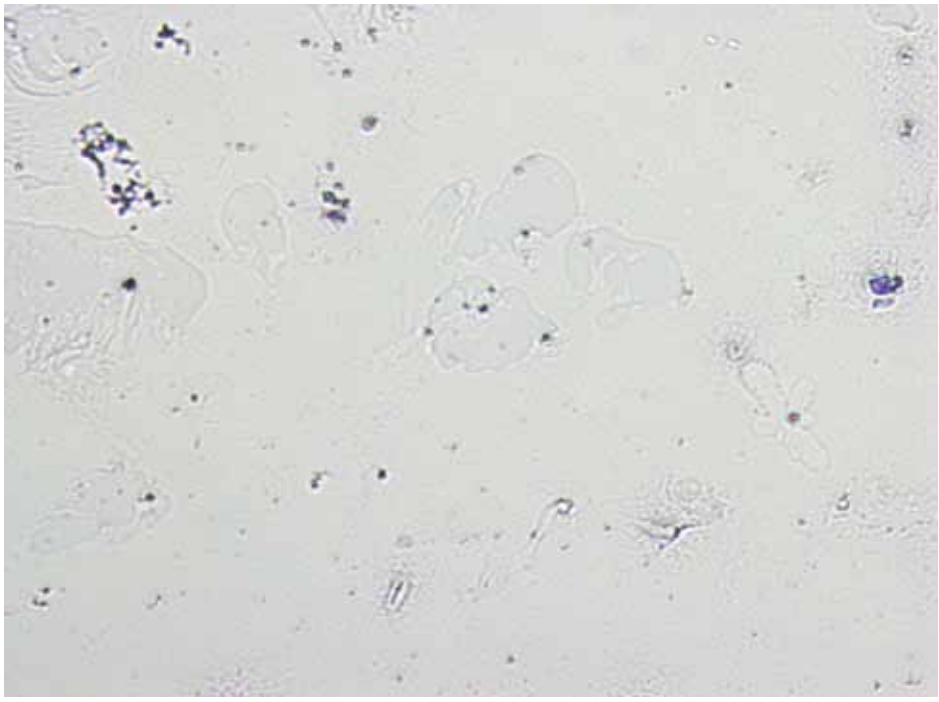

Figure 1. Semen sample without spermatozoa

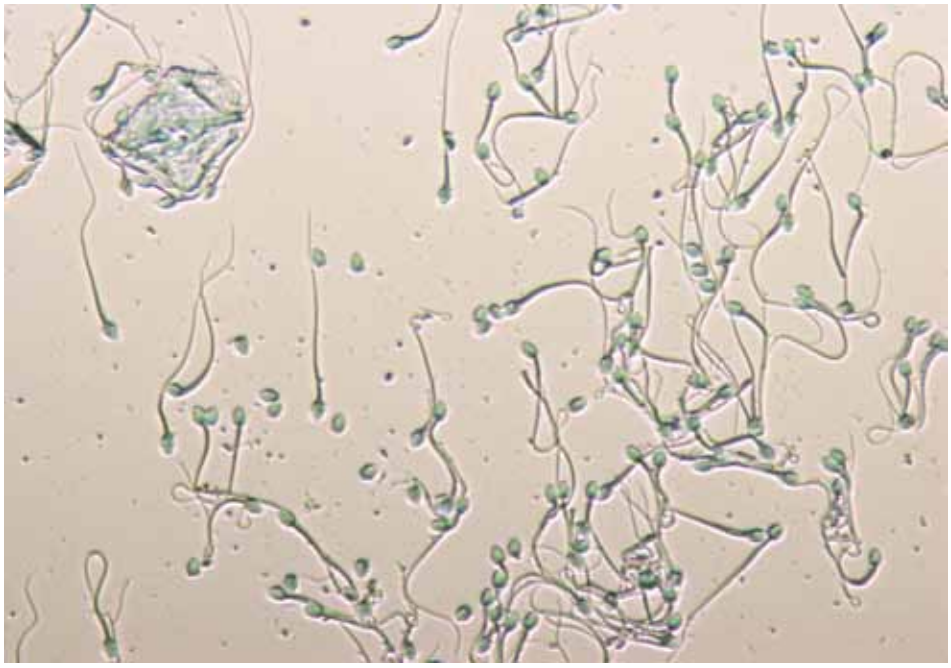

Figure 2. Semen sample with presence of spermatozoa

spermatozoa in their semen sample (Figure 2). These three macaques were in sub-adult category and failed to locate their tail of epididymis.

Studies using this method to long tailed macaque contraception report no or minimal signs of discomfort observed following injection, with variation depending on the route of administration and agent injected. This technique is also labour intensive. One of the challenges in this technique is that the juvenile and sub-adult long tailed macaque's epididymis is small and difficult to locate. Therefore currently DWNP is only castrating adult macaques to avoid mistakes during handling the specimens

CONCLUSION

Possible contributing causes to complications in castrating long tailed macaques include improper injection technique. Currently DWNP is paying attention in training field staffs in this castration technique. Practical test in proper injection technique is one of main core in these training programs. The low cost, ease of use, and cultural acceptance of a castration technique that does not require removal of the testis make ethanol-formalin castration a valuable option for large-scale use, particularly in controlling long tailed macaque population and reducing human-macaque conflicts in Peninsular Malaysia.

REFRENCES

1. Artois, M. (1997) Managing problem wildlife in the 'Old World';a veterinary perspective. *Reprod Fertil Dev* 9:17-25
2. Bertschinger, H.J., Trigg, T.E and Jochle, W. (2002) Induction of contraception in some African wild carnivores by down regulation of LH and FSH secretion using the GnRH analogue deslorelin. *Reprod Suppl* 60:41-52
3. Bloomberg, MS. (1996). Surgical neutering and non-surgical alternatives. J Am Vet Med Assoc 208:517-9
4. Cairns, J. (2004) You and earth's resources. *Ethics Sci Environ Politics* 18:9-11.
5. Fayrer, R.A., Dookwah, H.D and Brandon, CI .(2000) Immunocontrol in dogs. *Anim Reprod Sci* 60-61:365-73
6. Immegart, H.I and Threlfall, W.R. (2000) Evaluation if intratesticular injection of glycerol for nonsurgical sterrlization of dogs. *Am J Vet Res* 61:544-9
7. Jennifer, P.B., Eberhard, N and Trevor, G.C. (2006) Fertility control in wildlife: human as a model. *Contraception* 73:6-22
8. Jochle, W. (1991) Pet population control in Europe. *J am Vet Med Assoc* 198:1225-30
9. Julie, A., Scott, M., Kelly, F., Justin, T., Lisa, D and Mel ,L. (2004) A comparison of electroejaculation and epididymal sperm collection techniques in stallions. *Can Vet J* 45
10. Kutzler, M and Wood, A. (2006) Non-surgical methods of contraception and sterilization. *Theriogenology* 66:514-525
11. Oogjes, G. (1997) Ethical aspects and dilemmas of fertility control of unwanted wildlife: an animal welfarist's perspective. *Reprod Fertil Dev* 9:163-7
12. Pineda, M.H and Dooley, M.P. (1984) Surgical and chemical vasectomy in the cat. *Am J vet Res* 45:291-300