

SPERM ABNORMALITIES IN A DOG

S.R. Mohana Chandran Nair, J. Kalatharan and J. Rajasekaran
Department of Obstetrics and Gynaecology
Madras Veterinary College, Madras - 7

Abnormal sperm morphology has a significant effect on fertility. Identification of abnormal spermatozoa in the ejaculate is essential in efficient natural service and artificial insemination programmes. The percentage of normal morphology below which fertility in dog was adversely affected was found to be 60 percent (Oettle, 1993). The semen analysis described here is that of an adult male mongrel dog showing very high percentage of spermatozoa with abnormal morphology, in the ejaculate.

Materials and Methods

Semen samples were collected by digital manipulation technique, without the presence of a teaser bitch. The three fractions of ejaculate were collected into three sterile glass semen collection cups. The volume, colour and consistency were recorded. The sperm rich second fraction was analysed for seminal characteristics. Motility was assessed by the spermatozoa possessing progressive forward movement using a light microscope. Morphology of the spermatozoa was studied using eosin-nigrosin staining.

Results and Discussion

The Second fraction of semen was having a slightly cloudy colour and a thin consistency. The seminal characteristics are shown in the Table.

Characteristics	Mean	SD	Range
Motility (%)	28.5	10.54	10-40
Volume (ml)	1.74	0.67	0.5-3.2
Concentration (10 ⁶ /ml)	51.5	22.61	30-100
Total output (10 ⁶)	89.9	52.62	20-192
Abnormal spermatozoa (%)	83.85	13.18	66.27-99.3

The abnormal spermatozoa showed various degrees of coiled, folded and disrupted tail. (Fig. 1). Motility, volume and concentration showed high range of variation. The number of abnormal spermatozoa were always above 60 percent. Seminal analysis showed that the dog was infertile.

The sperm rich fraction of the dog was thin and cloudy in nature. Olson (1992) attributed this to oligospermia compared to the cream to white colour and homogenous appearance of normal semen. The spermatozoa always showed tail abnormalities above 45 percent. The percentage of motile sperms and volume of the sperm rich fraction showed extreme fluctuations. Oettle (1993) found that the dog was infertile if the percentage of normal morphology sperm cells was below 60 percent.

"Dag defect" reported in jersey bulls showed 40-50 percent coiled, folded and disrupted tails and collection of successive

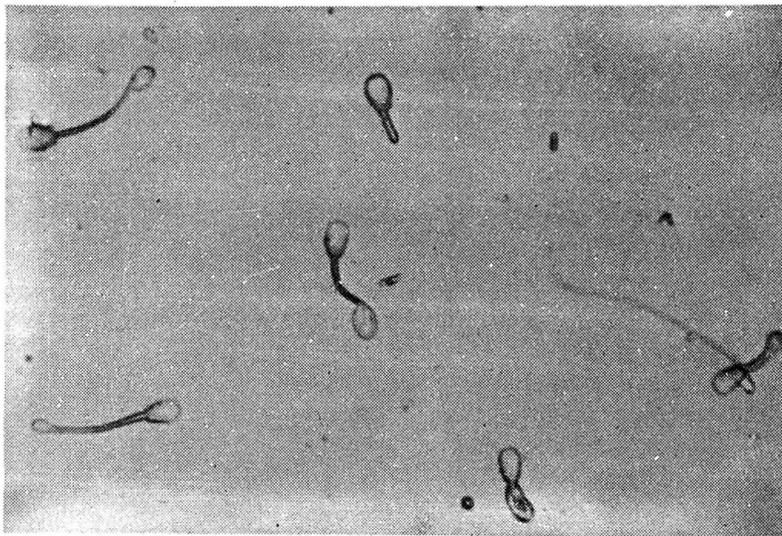


Fig. 1 Spermatozoa with coiled and folded tail

ejaculates had no effect on their incidence. The ultra structure studies showed that the tail fibres were abnormal, translocated or missing (Blom, 1966; Veerapandiyan *et al.*, 1992).

Since the repeated collection from the dog have not reduced the percentage of coiled tail spermatozoa, possibility of epididymal dysfunction as the sole cause of the condition can be ruled out. The condition may be hereditary and resembles the "dag defect" reported in Jersey bulls.

Summary

Semen evaluation of an adult male mongrel dog showed abnormal morphology of spermatozoa. Semen was collected by

digital manipulation and motility was estimated. Morphology was studied by eosin-nigrosin staining. Seminal analysis showed that the semen contained more than 65% abnormal spermatozoa with various degrees of tail coiling. The dog was infertile, and was similar to the "Dag defect" described in bulls".

Reference

Blom, E. (1965). New sterilizing and hereditary defect (the "dag defect") located in bull sperm tail. *Nature*, London, 209 739-740. In: Salisbury, G.W., N.L. Vandemark, J.R. Lodge, (ed). 1978. *Physiology of Reproduction and Artificial Insemination in cattle* (2nd Ed). W.H. Freeman Company, San Francisco. p 308

Oettle, E.E. (1993). Sperm morphology and fertility in the dog. *J. Reprod. Fert. Suppl.*, **47**: 257-260

Olson, P.N., (1992). Collection and evaluation of canine semen. In: Kirk, R.W. (ed). 1992. *Current Veterinary therapy -*

Small Animal practice (11th Ed). W.B. Saunders company, London PP: 983-943

Veerapandiyan, C. Edwin, J., Quyam, S.A., Rajasekaran, J. and Austin, A.J.S. (1992). "Dag defect" in two Jersey Bulls (Half sibs). *J. Anim. Reprod.* **13**(2): 143-144