

STUDIES ON CERTAIN ASPECTS OF EPIDIDYMAL SPERMATOZOA OF UNILATERAL CRYPTORCHID INDIGENOUS BOAR OF MEGHALAYA

S.K Baishya, Anubrata Das, G. Khargharia and R.K. Bardoloi
Animal Production Division, ICAR Research Complex for NEH
Region. Umiam, Umroi Road, Meghalaya-793103

ABSTRACT

A study was conducted to compare the epididymal sperm reserve, % of live sperm, morphological and acrosomal defects of epididymal spermatozoa of descended testis of unilateral cryptorchid indigenous boar of Meghalaya. The testes and epididymides (scrotal) were removed from both the boars by open method of castration for the study. The estimation of sperm concentration, % of live sperm, morphological and acrosomal defects were done as per method of Blom (1972) and Watson (1975). The overall epididymal sperm reserve ($\times 10^9$) of the descended testis of unilateral cryptorchid boar and the normal boar of the same age group were 10.35 and 16.90 respectively. The study also revealed the presence of higher percentage of proximal cytoplasmic droplets and acrosomal defects in epididymal spermatozoa of the unilateral cryptorchid in comparison to the normal boar.

INTRODUCTION

Cryptorchidism is a condition in which one or both testicles fail to descend into scrotum. Unilateral cryptorchidism, when one testis fails to descend into scrotum is a common reproductive disorder in swine (Roberts 1971). Unilateral cryptorchid boars are fertile because of normal spermatozoan production by the descended testis. However, due to inherited character, unilateral cryptorchid boars are never used for breeding purpose. The incidence of cryptorchidism may reach 1 to 2% in some herds (Arthur et. al. 1982), which ultimately causes economic loss to pig industry. The aim of the present study is to compare sperm concentration, % of live sperm, morphological and acrosomal defects of epididymal spermatozoa of descended testes of unilateral crypt orchid indigenous boars and normal indigenous boar of Meghalaya.

MATERIALS AND METHODS

One 1 – year old indigenous boar of Meghalaya was recorded unilateral cryptorchidism in pig farm, ICAR Research Complex for NEH Region, Umiam, Meghalaya – 793103. One normal boar of similar age group was randomly selected from indigenous pig of the farm and used as control. The testes and epididymides (scrotal) were removed from both the boars by open method of castration. Testes and epididymides were immediately brought to the laboratory in polythene bags contained ice. The testes and epididymides were weighed and measure separately after removal of fascia and other tissues. The epididymides were divided into caput, corpus and cauda regions on the basis of the external morphology. All three regions of each epididymis were put into patridish containing 50ml normal saline

solution and these were minced thoroughly and homogenized by using tissue homogeniser at 1500 rpm. The homogenate was filtered through muslin cloth. The filtrate was immediately examined under calibrated accuse cell spectrophotometer for estimation of sperm concentration. The live and dead sperm count and morphological defects was estimated by the method of Eosin and Nigrosin stain as per Bloom (1972). Acrosomal defects of sperm were determined as per the method described by Watson (1975).

RESULTS AND DISCUSSION

The Comparison between epididymal spermatozoa of descended testes of Cryptorchid boar and normal boar is presented in table. The overall epididymal sperm reserve was less in the cryptorchid boar than in normal boar and the sperm reserve were 10.35×10^9 and 16.90×10^9 respectively. Hafez (1997) and Kadange and Umaphy (1998) stated the reduced sperm concentration of unilateral cryptorchid boar than the normal boar. The overall percentage of live sperm was almost similar both in crypt orchid and normal boars and the percentages were 71.50 and 72.90 respectively. Likewise, the overall percentages of head, neck and tail defect were higher in crypt orchid boar than the normal boar and the corresponding values were 2.83, 2.00, 6.00 and 2.33 1.00 2.66 respectively. The presence of proximal cytoplasmic droplets was more in cryptorchid boar than normal boar, and the percentages were 32.00 vs. 6.00 in caput, 24.00 vs. 7.00 in corpus and 5.53 vs. 2.00 in cauda respectively Kadange and Umaphy (1998) also reported the higher percentage of proximal cytoplasmic droplets in the semen of unilateral cryptorchid boar than a normal boar. On the other hand, the overall percentage of distal cytoplasmic droplets was recorded more in normal boar than cryptorchid boar and the percentages were 36.00 and 34.00 respectively. The acrosomal defects were recorded as ruffle, completely loose acrosome, swollen acrosome and partially loose acrosome in cauda region of cryptorchid and normal boar. The percentages were 5.50, 1.00 and 5.00, 2.00 and 2.00, 1.00 and 2.00, 2.00 respectively. The acrosomal defects were more in cryptorchid boar as compared to normal boar.

Finally it could be concluded that the descended testis of unilateral cryptorchid boar contains reduced epididymal sperm concentration, presence of higher percentage of proximal cytoplasmic droplets and acrosomal defects than the epididymal sperm of a normal boar of same age group.

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Table 1: Comparison between epididymal spermatozoa of descended testes of Cryptorchid boar and normal board.

Sperm Parameters	Unilateral cryptorchid boar				Normal boar			
	Caput	Corpus	Cauda	Overall	Caput	Corpus	Cauda	Overall
Epididymal Sperm reserve (X 10 ³) % Live spermatozoa	1.22	0.97	8.16	10.35	2.20	1.20	13.50	16.90
	71.00	71.50	72.00	71.50	71.00	72.72	75.00	72.90
Morphological defects of spermatozoa (%)								
Head	2.00	2.00	4.50	2.83	3.00	2.00	2.00	2.33
Neck	1.00	2.00	3.00	2.00	-	1.00	2.00	1.00
Tail	6.00	5.00	7.00	6.00	2.00	3.00	3.00	2.67
Proximal Cytoplasmic Droplets	32.00	18.00	5.53	18.51	20.00	12.00	2.00	11.33
Acrosomal Defects								
Ruffle acrosome	ND	ND	5.50	5.50	ND	ND	1.00	1.00
Completely loose Acrosome	ND	ND	5.00	5.00	ND	ND	2.00	2.00
Swollen Acrosome	ND	ND	2.00	2.00	ND	ND	1.00	1.00
Partially loose acrosome	ND	ND	2.00	2.00	ND	ND	2.00	2.00

ND = Not Done