



Original Research

Comparative Gross Anatomical Studies on the Testes of Zovawk (Mizo Local Pig) and Large White Yorkshire Pig

T. Shitarjit Singh*, P. C. Kalita, A. Kalita, P. J. Doley, O. P. Choudhary and V. L. Rozami

Department of Veterinary Anatomy and Histology, College of Veterinary Sciences and Animal Husbandry, Central Agricultural University, Selesih, Aizawl-796014, Mizoram, INDIA

*Corresponding author: shitarjitthokchom555@gmail.com

Rec. Date:	Jul 26, 2018 10:50
Accept Date:	Oct 27, 2018 08:13
DOI	10.5455/ijlr.20180726105045

Abstract

The study was conducted on 12 apparently healthy pigs, out of which 6 were Zovawk (Mizo local pig) and 6 (six) were Large White Yorkshire pig. The testes of both type of pigs were reddish white in colour. They were elliptical and rounded to oval in shape in Zovawk and Large White Yorkshire pig. The long axis of the testis was oblique in Zovawk and slightly horizontal in Large White Yorkshire pig. The different biometrical values in regard to weight, length, width and thickness were found to be higher in left side of testis than the right side in Zovawk and Large White Yorkshire Pig. The average Net weight of the right and left testicles of adult Zovawk was 42.85 ± 4.88 gm and 43.93 ± 3.54 gm and that of Large White Yorkshire was 259.57 ± 32.22 gm and 269.52 ± 27.22 gm, respectively. These biometrical parameters were found to be low in Zovawk as compare to Large White Yorkshire pig.

Key words: Large White Yorkshire, Mizo Local Pig, Testis, Zovawk

How to cite: Singh, T., Kalita, P., Kalita, A., Doley, P., Choudhary, O., & Vanlalrozami, V. (2019). Comparative Gross Anatomical Studies on the Testes of Zovawk (Mizo Local Pig) and Large White Yorkshire Pig. International Journal of Livestock Research, 9(2), 91-94. doi: 10.5455/ijlr.20180726105045

Introduction

Zovawk is an indigenous pig of Mizoram. The size is small and attain puberty at the age of 2.5 months when they are about 4.5 kg body weight (Hmar *et al.*, 2010). As per its behavior this pig is very alert to the social happenings such as presence of any intruder in the farm by making immediate response to the sound or the gestures of the intruder (Prava *et al.*, 2014). Large White Yorkshire pig are the leading breed of pigs in the world as Yorkshires in the USA and Canada (Taylor *et al.*, 2005). They have white skin (usually free from black hair), longer legs than other breed and moderately long head with the face slightly dished, and the ears are pricked (Bunter and Bennett, 2004). Literature on gross morphology of testis of domestic animals are available however, comparative morphometrical observations on testis of Zovak and Yorkshire



are scanty. Therefore, the present study was aimed to document the comparative gross anatomical studies on the testes of Zovawk and Large White Yorkshire pig.

Materials and Methods

The present investigation was conducted on testes of twelve apparently healthy adult pigs (2 years of age), out of which six were Zovawk (Mizo local pig) and six were Large White Yorkshire pigs. Immediately after castration gross morphological and biometrical parameters like weight, length, width and thickness were recorded afresh. The data of the present investigation was analyzed by standard statistical procedure with the help of SPSS 20 (2013) as per Snedecor and Cochran (1994).

Results and Discussion

The testicles of pig were located caudo-dorsally at the perineal region producing a prominent landmark close to the anus. Their long axis was oblique in direction in Zovawk and slightly horizontal in Large White Yorkshire pig. The testes were larger and are regularly elliptical and rounded to oval in shape (Fig. 1 and 2). These observations were in accordance with the earlier report in pig (Ohanian *et al.*, 1979). Dyce *et al.* (2010) mentioned that the long axis of testes were vertical in ruminants, horizontal in horse and dogs and tilted towards the anus in pigs and cats.

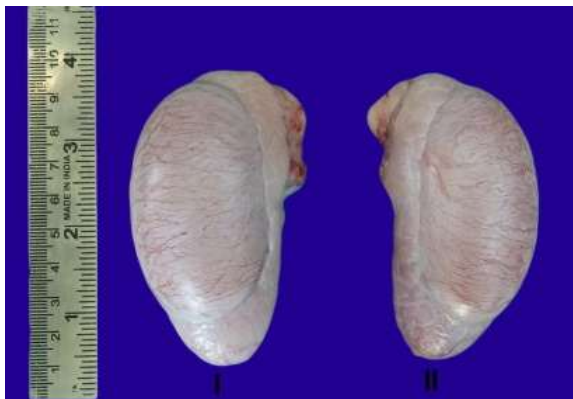


Fig. 1: Testis of Zovawk showing the Lateral aspect of left (I) and right (II) testis

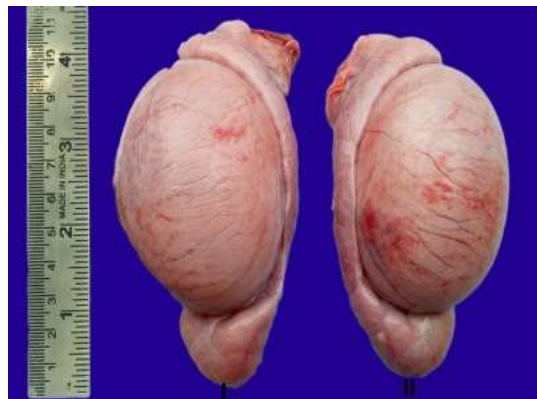


Fig. 2: Testis of Large White Yorkshire showing the Medial aspect of left (I) and right (II) testis

In the present study, the testes were reddish-white in colour. Similar observations were also recorded by Miller (1965) in dog. However, the testes were white in colour as reported by Sisson and Grossman (1953) in boar, Yaseen (2009) in Goat, Dyce *et al.* (2010) in ruminants. The average body weight of adult Zovawk and Large white Yorkshire was recorded as 62.67 ± 3.07 and 150.83 ± 5.69 kg in the present investigation. Similarly, Kalita *et al.* (2015) reported that the average body weight of adult Mizo Local Pig ($1^{1/2}$ -year of age) was 32.98 ± 1.56 kg. The average weight of the right and left testicles in adult Zovawk was 45.83 ± 5.29 gm and 47.16 ± 3.85 gm and that of Large White Yorkshire was 288.68 ± 36.77 gm and 301.78 ± 28.66 gm,

respectively. The average weight of tunica albuginea of right and left testes in adult Zovawk was 2.96 ± 0.48 gm and 3.23 ± 0.43 gm while in Large White Yorkshire was 29.20 ± 5.54 gm and 32.31 ± 3.82 gm, respectively. The average length of the right and left testicles of adult Zovawk was 5.51 ± 0.78 cm and 5.54 ± 0.12 cm and that of Large White Yorkshire was 10.85 ± 0.51 cm and 11.24 ± 0.47 cm, respectively. The average width of the right and left testicles of adult Zovawk was 3.75 ± 0.17 cm and 3.80 ± 0.19 cm and that of Large White Yorkshire was 6.14 ± 0.33 cm and 6.15 ± 0.25 cm, respectively. The average thickness of the right and left testicles of adult Zovawk was 4.28 ± 0.12 cm and 4.33 ± 0.16 cm while in Large White Yorkshire was 6.75 ± 0.26 cm and 7.02 ± 0.26 cm, respectively. The average Net testicular weight of the right and left testicles of adult Zovawk was 42.85 ± 4.88 gm and 43.93 ± 3.54 gm whereas in Large White Yorkshire was 259.57 ± 32.22 gm and 269.52 ± 27.22 gm, respectively (Table 1).

Table 1: Biometrical observations of various parameters of the right and left testicle of Zovawk and Large White Yorkshire pig

Parameter	Breed	Mean \pm SE	
		Right	Left
WOT (gm)	ZOV	45.83 ± 5.29	47.16 ± 3.85
	LWY	288.68 ± 36.77	301.78 ± 28.66
WOTA (gm)	ZOV	2.96 ± 0.48	3.23 ± 0.43
	LWY	29.20 ± 5.54	32.31 ± 3.82
NTW (gm)	ZOV	42.85 ± 4.88	43.93 ± 3.54
	LWY	259.57 ± 32.22	269.52 ± 27.22
LOT (cm)	ZOV	5.51 ± 0.78	5.54 ± 0.12
	LWY	10.85 ± 0.51	11.24 ± 0.47
TOT (cm)	ZOV	4.28 ± 0.12	4.33 ± 0.16
	LWY	6.75 ± 0.26	7.02 ± 0.26
WOT (cm)	ZOV	3.75 ± 0.17	3.80 ± 0.19
	LWY	6.14 ± 0.33	6.15 ± 0.25

ZOV: Zovawk, LWY: Large White Yorkshire, WOT: Weight of testis, WOTA: Weight of tunica albuginea, NTW: Net testicular weight, LOT: Length of testis, TOT: Thickness of testis, WOT: Width of testis.

These observations were in agreement with the earlier report of Raji *et al.* (2008) and Kabiraj *et al.* (2011) in goat, Nimse *et al.* (2011) in ram, Danillo *et al.* (2013) in wild boar and Samuel and Bankole (2016) in pig. In this present study, the biometrical parameters like weight, length, thickness and width were found to be higher in left testis as compare to the right side without any significant difference ($P > 0.05$) in the right and left testes of the same breed. However, there was significant difference ($P < 0.05$) between the Zovawk and Large White Yorkshire pigs.

Conclusion

The knowledge of the anatomy of male reproductive organs is a vital tool in the assessment of breeding soundness and fertility potential in domestic animals. However, due to paucity of literature on Zovawk (Mizo Local Pig) the present results could not discussed properly. This study was aimed for promotion and

advancement of the anatomical knowledge at the Comparative Gross Anatomical Studies on the Testes of Zovawk (Mizo Local Pig) and Large White Yorkshire Pig. It was observed that the testes were larger and regularly elliptical and rounded to oval in shape. The size of the left testicle was larger than right testicle in both the Zovawk and Large White Yorkshire pig. The results of the present study can be used as research baseline for the comparative anatomical and reproductive study of testis in other animals.

References

1. Bunter, K., and Bennett, C. (2004). Genotype comparisons for meat and eating quality traits. *AGBU Pig Genetics Workshop Notes*. pp: 59-69.
2. Danillo, V.F.M., Deiler, S.C., Marcelo, D.S., Fábio, J.C.F., and Tarcízio, A.R.P. (2013). Corporal and testicular biometry in wild boar from birth to 12 months of age. *Anim. Biol. Morphol.* doi.org/10.1590/S0034-737X2013000100001.
3. Dyce, K.M., Sack, W.O., and Wensing, C.J.G. (2010). *Textbook of Veterinary Anatomy*, 4th Edn. W.B. Saunders Company, Philadelphia. pp: 185, 578.
4. Hmar, L., Saikia, P., Thazuali, L., Tolengkomba, T.C., and Samanta, A.K. (2010). Conservation of Zovawk-a small variety pig of Mizoram. *Proceeding of National Symposium on Technology Management, Visioning and Up-scaling for Accelerating Livestock Production*, Guwahati India. pp: 136.
5. Kabiraj, S.K., Hoque, S A.M., Khandoker, M.A.M.Y. and Husain, S.S. (2011). Testicular biometry and its relationship with body weight and semen output of black Bengal bucks in Bangladesh. *J. Cell and Anim. Biol.*, 5(2): 27-32.
6. Kalita, A., Doley, P.J., Kalita, P.C., and Tolengkomba, T.C. (2015). Morphology and Morphometry of Male Genital System of Zovawk: An Indigenous Pig of Mizoram. *Ind. J. Vet. Anat.*, 27(1): 17-20.
7. Miller, M. E. (1965). *Anatomy of the Dog*. W.B. Saunder's company, London. pp: 755-761.
8. Nimse, R.J., Fulpagare, Y.G., and Mane, P.M. (2011). Gross anatomical studies of testes in sheep. XXVI annual convention of IAVA Technical Bulletin. pp: 9.
9. Ohanian, C., Rodriguez, H., Piriz, H., Martino, I., Rieppi, G., Garofalo, E.G. and Roca R.A. (1979). Studies on the contractile activity and Ultrastruture of the boar testicular capsule. *J. Reprod. Fer.*, 57: 79-85.
10. Prava, M., Tolengkomba, T.C., and Ayub, A.M. (2014). Hematological profile of Zovawk—an indigenous pig of Mizoram. *Vet. World*, 7(7): 505-508.
11. Raji, A.O., Igwebuike, J.U. and Aliyu, J. (2008). Testicular biometry and its relationship with body weight of indigenous goats in a semi-arid region of Nigeria. *ARPJ. Agric. Biol. Sci.*, 3(4): 35–38.
12. Samuel, G.O., and Bankole, O. (2016). Morphology of the Testis and Epididymis of Large White Boars. *Turkish J. Agriculture- Food Sc. and Tech.*, 4(5): 374-377.
13. Sisson, S. and Grossman, J.D. (1953). *The anatomy of the domestic animals*. 4th edn. W.B. Saunders Company, Philadelphia and London. pp. 581-605.
14. Snedecor, G.W., and Cochran, W.G. (1994). *Statistical methods*, 8th Edn. Iowa State University Press, pp. 313.
15. Taylor, G., Roese, G., and Hermes, S. (2005). Breeds of pigs-Large White. *Primefact*, 62: 1-3.
16. Yaseen, S.M., Joshi, S., Mathur, R., and Gajbe, R.U. (2010). Biometrical study on the testes of Marwari goats In the Semi-Arid Region. *Haryana Vet.*, 49: 72.