

True Hermaphroditism in a Large White Yorkshire Pig – Case Report

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Case Report

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ABSTRACT

A Large White Yorkshire sow aged two years and eighth month gave birth to 10 piglets in its fourth farrowing at Livestock Research Station, Kattupakkam during the year 2007-2008. Immediately after birth, individual piglets were weighed and sex of the piglets was recorded. During screening, a newborn piglet was found to possess scrotal sacs and vulval opening in the perineal region. Because of the absence of preputial sheath in the ventral abdomen, the newborn piglet urinated through vulva and the discharge appeared like an “arch”. The scrotal sacs were normal in texture and consistency, containing free moving testes with no adherence within the sac. The pig was fed with concentrate feed and slaughtered at nine month of age to study the internal genital organs and sample of tissue from internal mass for taken for histological study and found that it was a case of true hermaphrodite.

INTRODUCTION

During pregnancy, foetal sex was determined by their inherited genes, gonadogenesis, formation and maturation of accessory reproductive organs. Abnormalities during differentiation and development of gonads and ducts would result in varying degrees of intersexuality. Intersex (hermaphrodite) in farm animals is defined as the congenital abnormality, where the diagnosis of the sex is difficult. At the time of birth, presence of both ovarian and testicular tissues in an individual is called True hermaphrodite. If only ovarian tissues are present, the intersex is called a female pseudohermaphrodite, whereas if only testicular tissue is present, the term male pseudohermaphrodite is used ^[1]. Hermaphrodite in swine is seen occasionally and the affected pigs are usually male pseudohermaphrodites ^[2]. However, reports pertaining to hermaphrodites in pigs in India were scanty. Hence, the present paper reports on the occurrence of hermaphrodite in Large White Yorkshire pig.

A Large White Yorkshire sow aged two years and eighth month gave birth to 10 piglets in its fourth farrowing at Livestock Research Station, Kattupakkam during the year 2007-2008. All the piglets were healthy and active at the time of birth. Immediately after birth, individual piglets were weighed and sex of the piglets was recorded. During screening, a newborn piglet was found to possess scrotal sacs and vulval opening in the perineal region (**Figure 1**). Because of the absence of preputial sheath in the ventral abdomen, the newborn piglet urinated through vulva and the discharge appeared like an “arch”. The scrotal sacs were normal in texture and consistency, containing free moving testes with no adherence within the sac. The pig was fed with concentrate feed and slaughtered at nine month of age to study the internal genital organs. As the age advanced, both genital organs had increased in size.



Figure 1: Presence of Scotum and vulva in Intersex LWY pig.

After humane method of slaughter, the whole pig carcass was opened and the following structures/abnormalities were observed in internal genital organs (**Figures 2 and 3**). Tissue samples from both ovaries were fixed into 10 percent formalin and paraffinized tissue section were cut into 4 - 6 um thickness and stained with haematoxylin and eosin (HE).



Figure 2: Female internal genitalia in intersex pig.



Figure 3: Male external genitalia- Testes in intersex pig.

Testes

- Scrotal sac was well developed and divided by septum raphe
- No adherence of scrotal sac with testicles.

- Outer surface of the testes was encapsulated with white fibrous mass of tissue.
- Presence of epididymis
- Spermatic cord continued from the dorsal end of testes and reached the inguinal region where it was attached to the hip muscles
- Absence of preputial sheath and penis.

Uterus

- Vulva and clitoris were hypertrophied.
- Vagina was under-developed
- Urethral opening was present in vagina
- Absence of cervix
- Portions of rudimentary tubular system
- Short, stumpy and undifferentiated uterine horns were present

Since the exotic pig population was high in temperate countries, reports on the hermaphrodite were also plenty especially in Europe and America. But in India, besides indigenous pigs, the population of exotic pigs was minimal and limited only in organized farming conditions and hence a few reports on hermaphrodites in pigs were documented. Based on the observations made, it was concluded that the case was a true hermaphrodite.

True hermaphrodites and male hermaphrodites were reported to be common occurrence in swine [3]. Pfeffer and winter [2] observed that hermaphrodite pigs had female secondary genitalia with a tendency towards clitoridean enlargement and excessive erectile tissue below the vulva. This observation was in concurrence with our findings. He also reported that in a herd of pigs about 1% of apparent females may be hermaphrodites, most of which are sterile. Pailhoux et al. [4] identified that intersexuality was inherited as an autosomal recessive trait in closed herd of swine. Tirant et al. [5] noticed three intersex female pigs, one with bilateral and other two with unilateral inguinal hernia. Externally, they had female genitalia and one matured ovary and one testis inside the abdomen, located on the left side. In the present study, there was no inguinal hernia; but they had well developed scrotal sac with testes.

In India, Bansal et al. [6] reported that a pig was confirmed to be a true hermaphrodite; but the other features were found to be different from our findings. They reported that the genitalia consisted of left ovary, oviduct, two coiled uterine horns, body of uterus along with right testis and an epididymis. Vagina and vulva were absent; but male urethra with prostate gland was present. Grossly the size of all the genital organs appeared to be normal.

From the findings, it would be concluded that the intersexuality is rare among swine population, but wide degree of variation appears in the development of internal genital organs and other related structures.

Histology study

Testicular elements consisted of well-developed seminiferous tubule containing seminiferous tubular epithelial cells, sertoli cells and interstitial cells were also observed. Presence of uterine elements consists of uterine mucosa, endometrial glands and myometrium were also seen. Ovarian stroma, ovarian follicles, portion of oviduct and epididymis were also seen (**Figure 4a and 4b**). The same histological observations were reported by Bansal et al. [6] in an Indian pig and Lee et al. [7] in Korean Pigs.

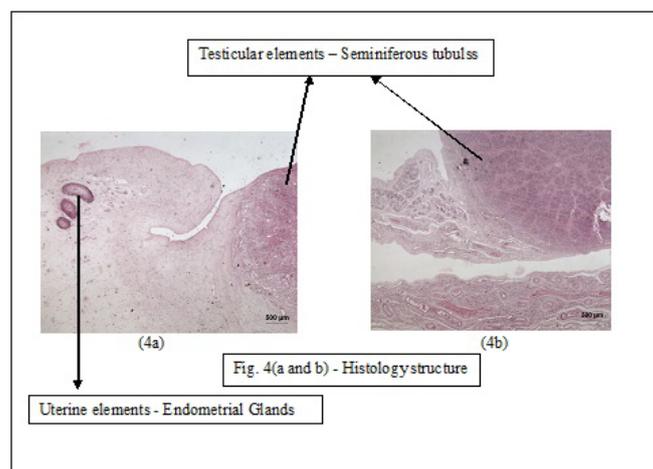


Figure 4: (a and b) Histology structure.

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