Maceration of Fetus in the Japanese Serow (Capricornis crispus)  
Yoshio YAMAMOTO, Yasuo ATOJI, Isao KITA1), and Yoshitaka SUZUKI  
Laboratory of Veterinary Anatomy and 1)Laboratory of Theriogenology, Department of Veterinary Science, Faculty of Agriculture, Gifu University, Gifu 501-11, Japan  
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ABSTRACT. Out of 2,138 pregnant Japanese serows (Capricornis crispus), one case of the maceration of fetus was found in the winter of 1991, and examined pathologically. Because the fetus was covered with the hairs in the head and the neck regions, the fetus seemed to be implanted in the last breeding season and retained. The endometrium lacked the placentomes completely and showed metaplasia to the keratinized or non-keratinized squamous epithelium. In the non-keratinized region, the accumulation of neutrophils, eosinophils, lymphocytes, plasma cells and foreign giant cells was prominent in the subepithelial connective tissue. — KEY WORDS: Capricornis crispus, Japanese serow, Maceration of fetus.


Maceration of a fetus occurs under the condition of bacterial infection, when the fetus is retained in the uterus after fetal death or abnormal parturition. Although the maceration is commonly observed in cows and mares [3], it has not been reported in the Japanese serow. As we encountered the maceration of the fetus in this species, we examined the endometrium pathologically for the first time.

The Japanese serow aged three and a half years was shot by legal permission on December 20, 1991, during the period of the surveillance on the wild mammals in Nagano Prefecture, Japan. The gravid uterus was immersed in 10% formalin and brought to our laboratory. After the macroscopical observation, small pieces of tissues were dissected out from the uterus and the fetal head and shoulder. These tissues were routinely embedded in paraffin, sectioned at 3 μm, and stained with hematoxylin and eosin for histopathological examinations.

The macerated fetus was retained in the left uterine horn. The placentomes and umbilical cord were completely disappeared, and the endometrium was rough-surfaced. The macerated fetus was atrophied and lacked visceral organs completely. Fetal tissues were diminished except the bleached bones in the upper jaw and the lower half of the body (Fig. 1). The bones showed neither abnormality nor deficiency. The skin was fully covered with the hair in the head, neck and trunk.

Histopathologically, the thick endometrium showed metaplasia to the keratinized or non-keratinized stratified squamous epithelium (Fig. 2). In the subepithelial connective tissue, the accumulation of neutrophils, eosinophils, lymphocytes, plasma cells and foreign giant cells were prominent in the non-keratinized region, but slight in the keratinized region. There was no evidence of infection in fetal tissues. The squamous epithelial metaplasia of the endometrium may be due to the lasting physical stress from the dead fetus. The cell accumulation may be caused by the secondary bacterial infection from the lesion injured by the bleached bones.

A total of 2,138 pregnant Japanese serows was obtained in Gifu, Nagano, Aichi and Yamagata Prefectures. Among them, 349 serows were examined in Gifu University during 1979 to 1985, and the others were examined by Japan Wildlife Research Center during 1986 to 1993.

Fig. 1. The macerated fetus of the wild Japanese serow. The fetal tissues in the upper jaw and the lower portion of the body are disappeared expect the bleached bones. × 0.45.

Fig. 2. Micrograph of the endometrium showing metaplasia to the keratinized (right) and non-keratinized (left) stratified squamous epithelium. In the non-keratinized region, the cell accumulation is prominent with foreign giant cells. × 300.

The fetal maceration was detected only in the present case and its incidence was calculated as 0.005%. As there were no pathological findings to specify the factors to induce the fetal maceration in the present case, the fetal death has been suggested to be caused by both genetic and environmental factors [2].

The fetus was measured to be 29.5-34.0 cm in crown-rump length (CRL), and estimated to be 150-165 days of gestation [4, 5]. According to the prenatal growth curve of Japanese serows [4], fetuses were expected to be about 10
cm in CRL at the end of December. In the present case, however, the CRL of the fetus contradicted to that expected from the growth curve. This may suggest that the fetus was not implanted in the breeding season of 1991, but probably in that of 1990, died on the way of development and was retained in the uterus for about 9–10 months. The corpus luteum graviditatis begins to regress rapidly from 100–105 days of gestation in the Japanese serows [1]. Although the ovaries of the mother animal were not available to observe in the present study, the gestation seemed to be maintained by gestagen from the endometrium and/or persistent corpus luteum.

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REFERENCES