POSTPARTUM UTERINE INVOLUTION IN PRIMIPAROUS AND PLURIPAROUS POLISH LONGWOOL SHEEP MONITORED BY ULTRASONOGRAPHY

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Abstract

The study was carried out on 29 primiparous and 22 pluriparous winter-lambing, suckling Polish Longwool sheep variety Kamieniecka. The completion of uterine involution was determined by means of transrectal ultrasonography. Parameters for the evaluation of uterine involution were the transversal diameter and the presence of uterine lumen. The results show that uterine involution was completed in the majority of ewes till day 35 postpartum. Furthermore, the results indicate that parity affected uterine involution. It was completed earlier in primiparous than in pluriparous ewes.

Key words: ewes, parity, uterine involution, ultrasonography.

The postpartum period in the sheep is very important from a reproductive perspective. It is characterized by the involution of the uterus and return to the ovarian functions to prepare the animal for a new pregnancy period. The process of uterine involution is influenced by breed, management, season, dystocia and suckling (4, 8, 10, 17, 18). The time required for complete uterine involution in the sheep varies between 17 and 40 d (3, 14, 17, 18).

It is difficult to judge the time of uterine involution in the sheep, because the uterus can not be examined by rectal or abdominal palpation. In the most studies uterine involution was investigated postmortem at slaughter (3, 5 - 7, 13, 17, 19) or by laparotomy (18). Ultrasonography provided a non-invasive technique to image directly the reproductive tract (9). In sheep, ultrasonography is routinely used for pregnancy diagnosis (2, 12). Recently, it was showed that transrectal ultrasonography is a useful and reliable method to observe the uterine involution in sheep (10, 20).

The Polish Longwool sheep variety Kamieniecka is a local breed in north-east Poland, which is used for lamb meat production. There is still little information concerning the course of puerperal period in sheep of this breed. Our preliminary results indicate that the uterine involution is completed in mostly winter-lambing sheep to day 35 postpartum (20). There is no information about the influence of parity on uterine involution in the sheep.

The aim of this study was to evaluate the time of uterine involution in primiparous and pluriparous winter-lambing Polish Longwool sheep variety Kamieniecka by using the transrectal ultrasonography.

Material and Methods

The study was carried out on 29 primiparous and 22 pluriparous suckling Polish Longwool sheep variety Kamieniecka. The age of the ewes ranged from one to six years. They were spontaneously lambing in January or February. The sheep were fed haylage and CJ mixture.

Sonographic examination was carried out on days 25, 30 and 35 postpartum (p.p.) by using a real-time, B-mode ultrasound scanner (Pie Medical Scanner 200) with a linear-array transducer of 5.0 MHz. Sonographic pictures were documented by a video graphic printer (Mitsubishi P67E). The animals were examined in standing position by transrectal ultrasound scanning. The probe fixed to an extension rod was inserted into the rectum. For scanning of the uterus, the probe was moved approximately 60° to each side around its longitudinal axis. Parameters for the determination of
the endpoint of uterine involution were the transversal diameter of uterine horns of ≤ 2 cm and the lack of contents in the uterine cavity (10, 20). Additionally, the sheep were examined by vaginoscopy and the presence of the postpartum discharge was registered.

The differences in uterine involution rate between primiparous and pluriparous ewes were analysed using chi-square test.

**Results**

The postpartum uterus showed typical ultrasonographic pattern. The uterine wall and uterine lumen were readily identified by different ultrasonographic echotextures. The end of uterine involution was characterized by a small cross-sectional diameter of uterine horns and absence of lochia in the uterus (Fig. 1). As was showed by vaginoscopy, postpartum discharges were no more present in the vagina. In cases of delayed uterine involution transversal diameter of uterine horn exceeded 2 cm and lochia were still present in the lumen (Fig. 2). In association with this, small amounts of thick brown secretion were found in the vagina.

Till day 35 p.p. uterine involution was completed in all primiparous ewes and in 81.8% of multiparous ewes. The difference between both groups was statistically significant (P ≤ 0.05). The uterine involution rate at 25 and 30 d p.p. was higher in primiparous ewes than in pluriparous ones, but the difference was not statistically significant (Table 1).

![Fig. 1. Ultrasound scanning of the uterus at day 35 p.p. Uterine involution completed: arrows indicate uterine horns without lumen.](image1)

![Fig. 2. Ultrasound scanning of the uterus at day 30 p.p. Uterine involution not completed: arrow indicate uterine lumen with fluid accumulation.](image2)

**Table 1**

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<td></td>
<td>25</td>
<td>30</td>
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<tr>
<td>Primiparous ewes n = 29</td>
<td>27.6 %</td>
<td>58.6 %</td>
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<td>Pluriparous ewes n = 22</td>
<td>22.7 %</td>
<td>54.5 %</td>
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a, b – statistically significant difference (P ≤ 0.05)

**Discussion**

The results show that winter-lambing, suckling ewes of Polish Longwool breed complete the uterine involution by day 35 p.p. This is in accordance with our earlier findings (20). Similar time for the end of uterine involution in ewes was also reported by Kucharski et al. (14), Rubianes and Ungerfeld (17) as well as O’Shea and Wright (16). In contrary, other authors (7, 17, 18) observed the end of uterine involution approximately at day 20 p.p. The variability regarding the time required for a complete uterine involution may result from breed differences and period of lambing and suckling. Rubianes et al. (18) reported that uterine involution was completed earlier in autumn-lambing ewes than in spring-lambing ewes. Some authors (4, 8) found a delay in uterine involution in suckling ewes.

Furthermore, the results indicate that the uterus involuted more rapidly in primiparous than in pluriparous ewes. The involution rate at day 35 p.p. was significantly higher (P ≤ 0.05) in primiparae than that in pluriparae. Thus, the age of animals should be taken into consideration.

The influence of parity on uterine involution in ewes has been until now not investigated. The delay in uterine involution in older animals was found in cows (1, 11, 15).
The reliability of transrectal ultrasonographic imaging of the puerperal uterus in sheep was assessed (10, 20). The present study confirms that ultrasonography is an important research tool for the estimation of the completion of uterine involution in sheep.

There was a relationship between the course of uterine involution and puerperal discharges. In ewes with incomplete uterine involution the small amounts of thick brown secretion were present in the vagina. Similar observations were made by Kucharski et al. (14).

The results of the present study showed that the uterine involution in winter-lambing, suckling Polish Longwool sheep variety Kamieniecka is affected by parity. It is more rapidly completed in primiparous than that in pluriparous animals.

References