

Prolonged dystocia, uterine necrosis, and ovariohysterectomy in a Chios ewe

Christos N. BROZOS^{1*}, Lazaros LAZARIDIS¹, Isidoros KARAGIANNIS¹, Evangelos KIOSSIS¹,
Georgios TSOUSIS¹, Vasilios PSYCHAS², Nektarios D. GIADINIS¹

¹Clinic of Farm Animals, School of Veterinary Medicine, Aristotle University of Thessaloniki - GREECE

²Laboratory of Pathology, School of Veterinary Medicine, Aristotle University of Thessaloniki - GREECE

Received: 09.05.2011

Abstract: A 4-year-old Chios ewe was submitted to the Clinic of Farm Animals (School of Veterinary Medicine, Aristotle University of Thessaloniki). The animal had delivered 2 healthy lambs, 2 days earlier, and was inappetent, depressed, and reluctant to move, while it had tachycardia and tachypnea. The cervix was opened at a dilation of 1 finger in diameter and fetid fetal membranes expelled from the vagina. Serum biochemistry revealed renal and liver disease, while ultrasonography revealed uterine dilatation. Laparotomy revealed a partly autolysed embryo in the uterus and gangrenous metritis. *Clostridium perfringens* and *Escherichia coli* were isolated in bacterial cultures from the necrotic uterus. As the condition was critical, an ovariohysterectomy was conducted in order for the ewe to survive. Unfortunately, the animal died the following day and a necropsy revealed liver and kidney degeneration.

Key words: Sheep, gangrenous metritis, dystocia, *Clostridium perfringens*, *Escherichia coli*, ovariohysterectomy

Dystocia in sheep can be the result of poor maternal pelvic conformation, an oversized fetus, lamb malpresentation, unskilled shepherding, partial uterine inertia in polytocous ewes, vaginal prolapse, ringwomb, uterine torsion, and ectopic pregnancy (1-3). A delay in treatment of dystocia increases the risk of losing of the lambs, as well as of the ewe. Prolonged dystocia in ewes causes necrotic metritis and is usually fatal (1,3,4). An ovariohysterectomy has been described as a way to treat severe necrotic metritis in cows (5). However, similar cases have not been reported in sheep.

This short communication describes a case of prolonged dystocia in a Chios ewe that resulted in gangrenous metritis. In addition, the clinicopathological findings and the therapeutic approach with ovariohysterectomy are described.

* E-mail: brozos@vet.auth.gr

A 4-year-old Chios ewe was submitted to the Clinic of Farm Animals (School of Veterinary Medicine, Aristotle University of Thessaloniki). The animal had delivered 2 healthy lambs, 2 days earlier. According to the sheep owner, the ewe was inappetent and depressed for 48 h after parturition and its milk production had decreased. Empirical treatments with antibiotics and calcium solution were ineffective. This was the only case in the whole flock (140 ewes) that was observed. Clinical examination revealed tachycardia, tachypnea, congestion of the conjunctiva, and abdominal pain. The rectal temperature was normal. The ewe was in lateral recumbency and reluctant to move. The cervix was open at a dilation of 1 finger in diameter and fetid fetal membranes expelled from the vagina. An ultrasonographic examination revealed a dilated uterus filled with anechogenic fluid

and hyperechogenic particles, making the image obscure and the presence of an embryo uncertain. Hematological values were within the normal limits (6), while serum biochemistry revealed renal and liver dysfunction. Serum creatinine was 309.75 $\mu\text{mol/L}$ (reference range 88.40-123.54 $\mu\text{mol/L}$), blood urea nitrogen (BUN) was 26.54 mmol/L (reference range 4.28-14.28 mmol/L), and total bilirubin was 10.26 $\mu\text{mol/L}$ (reference range 1.07-5.35 $\mu\text{mol/L}$). Reference ranges have been reported previously (7,8).

The presence of an embryo in the uterus was considered possible after ultrasonography and a laparotomy for caesarean section was decided. Laparotomy revealed fibrinous peritonitis, gangrenous metritis, and a partly autolysed embryo in the uterus. The embryo, which was removed by a cesarean incision, was emphysematous. As the prognosis for the ewe's survival was poor, an ovariectomy was conducted to increase the ewe's possibility of survival. A sample from the necrotic uterus (Figure 1) was sent for bacteriological examination. *Clostridium perfringens* and *Escherichia coli* were isolated in the bacterial cultures. The ovariectomy was performed from the same section, with laparotomy from the left paralumbar fossa, as described for the cesarean incision.

For the ovariectomy, the mesometrium and round ligament of each uterine horn were transected after the ligation of small blood vessels. Transfixation ligatures were placed proximal to the cervix and the



Figure 1. The left uterus horn is markedly enlarged and congested. There are areas gray to green in color, presumably due to necrosis.

large uterine vessels. Then 2 hemostatic forceps were placed on the uterus body and at that spot the uterus was transected. A circumferential transfixation ligature of absorbable suture was placed close to the cervix and the remaining portion of the uterine body was fixed with an inverting suture pattern. The remaining body of the uterus was placed back into the abdomen.

Post-operatively, the ewe was hospitalized and observed closely for 24 h. The ewe died the following day, despite post-operatively treatment with antibiotics (ceftiofur 2.2 mg/kg), flunixin meglumine (2.2 mg/kg), fluid, and electrolyte administration. A necropsy was performed and, apart from fibrinous peritonitis, hemorrhages on mucous and serous membranes were seen (Figure 2). Hemorrhages and erosions in the abomasum were also detected. The liver and the kidney were discolored. A histopathological examination of the liver and kidneys revealed microvacuolation (lipidosis) and degeneration of hepatic and tubular epithelial cells, respectively.



Figure 2. Fibrin strands and patches covering the serosal surface, mainly the abomasum.

An ovariectomy increases the viability of bitches with pyometra (9) and of dairy cows with gangrenous metritis after uterine prolapse (5). In sheep, it has been successfully conducted once, in a single case of polypoid uterine leiomyosarcomas (10). To the best of the authors' knowledge, this is the first time that an ovariectomy was conducted

in a sheep with gangrenous metritis secondary to prolonged dystocia.

Dystocia incidence in sheep is about 3.1%. However, a case in a New Zealand flock with an incidence rate 31% has been reported (1,11). The mortality rate in sheep with dystocia has been found to be 3.8% (4). In the present study, dystocia was the result of bad management, a factor that seems to increase ewe losses during parturition. It is common practice to examine the genital tract of an ewe after the end of parturition, in order to confirm that no other fetuses exist in the uterus (4,12). This was not conducted in the present case and was the main reason for this complication. It is not easy to find the real cause of dystocia in the present case.

Prolonged dystocia resulted in a uterine infection and gangrenous metritis, as independently from the

causes of dystocia the retained fetus and the lochia provided a medium for bacterial multiplication (13). The isolated microorganisms *E. coli* and *C. perfringens* have been isolated from cases of metritis in cows (14), as well as in women (15). However, to date *C. perfringens* had not been reported as a cause of metritis in sheep (16). In fact, clostridial infection caused toxemia and renal and liver insufficiency, which led to the animal's death. Moreover, this is the most possible explanation for the failure of treatment, as there is no effective treatment for clostridial infections in sheep (3,17). It is certainly necessary for a larger number of similar cases to be studied in order for the pathogenetic mechanisms of gangrenous metritis to be understood, as it could also be useful for other animal species, as well as in human medicine.

References

- Hindson, J.C., Winter, A.C.: Genital abnormalities, obstetrical problems and birth injuries. In: Diseases of Sheep, 4th ed., Blackwell Publishing, London, 2007; 75-80.
- Sargison, N.: Sheep Flock Health, Blackwell Publishing, London, 2008; 69-83.
- Scott, P.R.: Sheep Medicine, Manson Publishing, London, 2007.
- Scott, P.R.: The management and welfare of some common ovine obstetrical problems in the United Kingdom. Vet. J., 2005; 170: 33-40.
- Miesner, M.D., Anderson, D.E.: Management of uterine and vaginal prolapse in the bovine. Vet. Clin. North Am. Food Anim. Pract., 2008; 24: 409-419.
- Panousis, N.K., Kritsepi-Konstantinou, M., Giadinis, N.D., Kalaitzakis E., Polizopoulou, Z., Karatzias, H.: Haematology values and effect of age and reproductive stage on haematological parameters of Chios sheep. J. Hell. Vet. Med. Soc., 2007; 58: 124-136.
- Roubies, N., Panousis, N., Fytianou, A., Katsoulos, P.D., Giadinis, N., Karatzias, H.: Effects of age and reproductive stage on certain serum biochemical parameters of Chios sheep under Greek rearing conditions. J. Vet. Med. A. Physiol. Pathol. Clin. Med., 2006; 53: 277-281.
- Pugh, D.G.: Appendix III. Normal values and conversions. In: Sheep and Goat Medicine, WB Saunders, Philadelphia, 2002; 451-455.
- Ververidis, H.N., Boscus, C.M., Stefanakis, A., Saratsis, P., Stamou, A.I., Krambovitis, E.: Serum estradiol-17 beta, progesterone and respective uterine cytosol receptor concentrations in bitches with spontaneous pyometra. Theriogen., 2004; 62: 614-623.
- Vemireddi, V., Langohr, I.M., Thacker, H.L.: Polypoid uterine leiomyosarcomas in a sheep. J. Vet. Diagn. Invest., 2007; 19: 309-312.
- McSporran, K.D., Buchanan, R., Fielden, E.D.: Observations on dystocia in a Romney flock. N. Z. Vet. J., 1977; 25: 247-251.
- Tsakalov, P.: Obstetrics of Domestic Animals, Publication Service of A.U.Th., Thessaloniki, 1991; 369-396.
- Azawi, O.I., Omran, S.N., Hadad, J.J.: Clinical, bacteriological and histopathological study of toxic puerperal metritis in Iraqi Buffalo. J. Dairy Sci., 2007; 90: 4654-4660.
- Noakes, D.E., Parkinson, T.J., England, G.C.W., Arthur, G.H.: Arthur's Veterinary Reproduction and Obstetrics, 8th ed., Elsevier Science Ltd., London, 2002.
- Lichtenberg, S.E., Henning, C.: Conservative management of clostridial endometritis. Am. J. Obst. Gynecol., 2004; 191: 266-270.
- Mavrogianni, V.S., Brozos, C.: Reflections on the causes and the diagnosis of peri-parturient losses of ewes. Small Rumin. Res., 2008; 76: 77-82.
- Lewis C.J.: Clostridial Diseases. In: Diseases of Sheep, 4th ed., Blackwell Publishing, London, 2007; 156-167.