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Urolithiasis in a Sixth Month Dorper X Hampshire Male Sheep: A Case Report

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ABSTRACT

Obstructive urolithiasis is a prevalent condition in small ruminants within intensive production systems. The following factors have been identified as predisposing factors: diets high in concentrates or minerals such as calcium and phosphorus, excessive consumption of corn and sorghum, and the intake of water with a high mineral concentration. The onset of the disease is characterized by the formation of microliths in the kidneys, which undergo growth and subsequently obstruct the urethra, thus giving rise to the clinical manifestations that are observed. In some cases, pharmacological treatment can sometimes be initiated at the first signs with positive results. Furthermore, surgical techniques can be employed to remove uroliths. However, once the disease is detected, the prognosis is not very favorable, which is why the animals are usually candidates for slaughter. In this study, we present a case of urolithiasis in a sixth month-old Dorper x Hampshire sheep during a necropsy procedure.

INTRODUCTION

In rural areas, small ruminants play a special sociocultural role, providing a source of food and clothing, and contributing to people income (Mekonen *et al.*, 2024). They are easily adaptable and thrive in arid and semi-arid areas with land where there is little vegetation (Ismail *et al.*, 2024). However, sheep productivity can be affected by various factors, including the presence of disease (Gemechu *et al.*, 2024). Obstructive urolithiasis is a common condition in small ruminants subjected to intensive production programs, causing losses to producers who maintain this production system (Makhdoomi & Gazi, 2013). This disease is more prevalent in males, especially those fed poorly balanced diets, with high levels of grains such as corn and sorghum, excess calcium and phosphorus, and the consumption of mineralized water (VanMetre & Divers, 2002). Apart from nutritional and management factors, physiological aspects such as anatomical differences make the condition more prevalent in males (Ewolt *et al.*, 2008). Around the world, obstructive urolithiasis cases have been reported in buffaloes (Abdallah *et al.*, 2021), cattle (Cowley and Hoper, 2023), caprines (Nair *et al.*, 2022), and ovines (Firdous *et al.*, 2022). In this study, we present a case of urolithiasis in a sixth month-old Dorper x Hampshire sheep.

Case Presentation

On 15 March 2024, the proprietor of a sheep attended at the facilities of the Faculty of Veterinary Medicine and Animal Husbandry No. 2 of the Autonomous University of Guerrero to enquire about the animal's condition. A Veterinary Zootechnician accompanied her to her production unit, located in the community of Cuajinicuilapa, Guerrero, a place characterized by

a warm, subhumid tropical climate with summer rains (García de Miranda, 2004). The animal shelter pens meet the construction specifications established in accordance with the guidelines for sheep housing (FAO, 2022). Water is freely available, while feed is provided in the morning and in the afternoon/evening. The diet consists primarily of concentrated commercial feed to meet nutritional requirements (NRC, 1985), with emphasis on animals in environmental conditions of tropical regions (Chay-Canul *et al.*, 2016). Animal health management includes a deworming, vaccination, and vitaminization schedule, as recommended by Esqueda-Coronado (2012) for sheep in Mexico.

During external observation of the animal, abdominal distension with subcutaneous edema in the ventral abdomen and prepuce, and a urine odor was preceived. The owner reported that the animal had a lack of appetite and appeared depressed. The aforementioned signs are consistent with what has been reported in the literature (Makhdoomi & Gazi, 2013). Once the presumptive diagnosis was communicated to the owner, their consent was sought to euthanize the animal and perform a necropsy. The animal was euthanized in the production unit according to the guidelines described by Lloyd and Playford (2013), respecting the principles of a dignified death, while the steps for the autopsy were carried out according to the guidelines proposed by King *et al.* (2013). The findings from the autopsy process are illustrated in Figure 1.

RESULTS AND DISCUSSION

This paper describes the presence of uroliths in a six-month-old Dorper x Hampshire sheep. In ruminants, obstructive urinary lithiasis is a common pathology (Abdallah *et al.*, 2021; Firdous *et al.*, 2022; Nair *et al.*, 2022;

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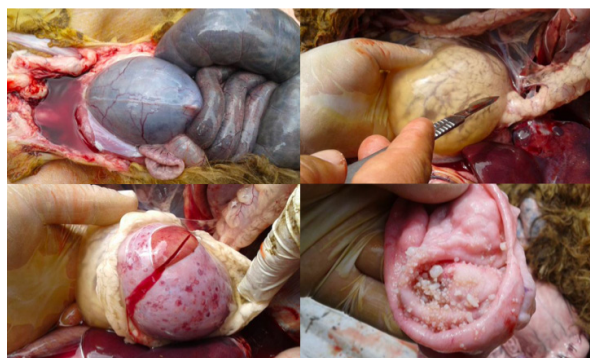


Figure 1: Procedure sequence for locating the bladder and observing uroliths at necropsy

Cowley y Hoper, 2023). The factors involve excessive consumption of minerals in water and food, in addition to anatomical differences that make the condition more prevalent in males (Ewolt *et al.*, 2008; Makhdoomi & Gazi, 2013; VanMetre & Divers, 2002). As can be seen in Figure 1, the findings are consistent with what has been described in the literature for cases of urolithiasis (Carrillo-Díaz *et al.*, 2015; González-Jiménez *et al.*, 2014; Gutiérrez-Chávez *et al.*, 2010; Ramírez-Soria *et al.*, 2020). In this case, the following observations were made: the presence of yellowish fluid with a urine odour was observed in the abdominal cavity; there was an increase in the size of both kidneys; and there were diffuse hemorrhages of variable size in the urethra. The bladder was found to be enlarged, with multiple hemorrhages in the mucosa and multiple uroliths of variable size.

The pathophysiology of the condition involves a reduction in water consumption as an important point, derived from the body's water balance and the effects on urine volume and concentration, where negative body water balance contributes to supersaturation, with the consequent precipitation of crystals and the formation of organic and inorganic crystalloids in the urine (Ewolt *et al.*, 2008). On the other hand, once uroliths cause urethral obstruction, there is an increase in pressure and stretching of the bladder wall, causing inflammation, with thinning, formation of trabeculae and herniation of the mucosa of the urinary bladder; as a consequence, uroperitoneum and peritonitis are lesions caused by the leakage and stagnation of urine in the peritoneal cavity, leading to pathological sequelae with a fatal outcome (Nair *et al.*, 2022).

For cases of urolithiasis, Firdous *et al.* (2022) observed in their study a prevalence close to 30%, this data represents an average prevalence, given that Sickinger and Windhorst (2022) in their review work found prevalences that range between 15 and 60% and among the main factors they mention diets with grains, mainly corn and sorghum, attributing the majority of cases to the latter. Regarding treatment, Abdel-Fattah *et al.* (2022) and Yohannes & Tesfay (2024) mention that urethrostomy, in its different variants, can be used with good results in cases diagnosed early and without complications. However, animals that

show symptoms are usually sent to the slaughterhouse due to the prognosis of the disease (Vanselow, 1994).

CONCLUSIONS

This study presents a report on the occurrence of urolith formation in a six-month-old Dorper x Hampshire sheep. The process is multifactorial in nature, with the composition of uroliths being determined by the predominant minerals involved. The etiology of the disease is typically associated with a dietary imbalance; consequently, further in-depth studies are warranted on the types of food or other possible factors associated with the development of urolithiasis.

REFERENCES

- Abdallah, A., Ezzeldeen, S., Eisa, E., Abd El Raouf, M., & Bayoumi, Y. (2021). Obstructive urolithiasis in buffalo calves (*Bubalus bubalis*): Serum changes of Vitamins A and D and efficacy of surgical management using tube cystostomy. *Veterinary World*, 14(1): 129-136. <https://doi.org/10.14202/vetworld.2021.129-136>
- Abdel-Fattah, M., Seddek, A. M., & Elrashidy, M. H. (2022). Comparison between two urethrotomy techniques for treatment of urethral obstruction by urolithiasis and cystorrhesis in cattle calves (Field study on 50 calves). *SVU- International Journal of Veterinary Science*, 5(4): 75-87. <https://doi.org/10.21608/svu.2022.163487.1227>
- Carrillo-Díaz, F., Salgado-Moreno, S., Escalera-Valente, F., Carmona-Gasca, C., Peña-Parra, B., & Macías-Coronel, H. (2015). Urolitiasis en ovinos. *Abanico Veterinario*, 5(3): 49-57. http://www.scielo.org.mx/scielo.php?script=sci_arttext&pid=S2448-61322015000300049&lng=es&tln=es
- Chay-Canul, A. J., Magaña-Monforte, J. G., Chizzotti, M. L., Piñero-Vázquez, A. T., Canul-Solís, J. R., Ayala-Burgos, A. J., Ku-Vera, J. C., & Orlindo-Tedeschi, L. (2016). Requerimientos energéticos de ovinos de pelo en las regiones tropicales de Latinoamérica. Revisión. *Revista Mexicana de Ciencias Pecuarias*, 7(1): 105-125. <https://www.redalyc.org/articulo.oa?id=265644475002>
- Cowley, J., & Hopper, R. (2023). Management of urolithiasis in breeding bulls. *Clinical Theriogenology*, 15: 9646. <https://doi.org/10.58292/CT.v15.9646>
- Esqueda-Coronado, M. H. (2012). Manejo preventivo para mejorar productividad y rentabilidad en explotaciones ovinas. Instituto Nacional de Investigaciones Forestales, Agrícolas y Pecuarias.
- Ewoldt, J. M., Jones, M. L., & Miesner, M. D. (2008). Surgery of obstructive urolithiasis in ruminants. The Veterinary Clinics of North America. *Food Animal Practice*, 24(3): 455-465. <https://doi.org/10.1016/j.cvfa.2008.06.003>
- FAO. (2022). Sheep farmer field schools – A facilitators' guide. Development and application of sustainable sheep production and food value chains – UTF/AZE/009/AZE. Baku.
- Firdous, W., Parrah, J. D., Bilal, S., Athar, H., Dar, M. D., &

- Handoo, N. (2022). Prospective clinical study on the occurrence of ovine urolithiasis in Kashmir Valley of India. *Indian Journal of Animal Research*, 56(12): 1542-1546. <https://doi.org/10.18805/IJAR.B-4202>
- García de Miranda, E. (2004). Modificaciones al sistema de clasificación climática de Köppen. Universidad Nacional Autónoma de México, Instituto de Geografía.
- Gemechu, T., Tulu, A., Gelana, M., & Tadesse, T. (2024). The Effects of Maize and Napier Grass Ensiled with Dolichos Lablab on Feed Intake Growth Performance and Carcass Traits of Horro Lambs. *International Journal of Veterinary Medicine and Animal Science*, 1(1), 46–55. <https://doi.org/10.54536/ijvm.v1i1.3256>
- González-Jiménez, C., Valladares-Carranza, B., Velázquez-Ordoñez, V., & Ortega-Santana, C. (2014). Estudio clinicopatológico de trastornos genito-urinarios en un rebaño ovino del estado de México. *Revista Electrónica de Veterinaria*, 15(11): 1-7. <https://www.redalyc.org/articulo.oa?id=63638000005>
- Gutiérrez-Chávez, A. J., Mejía-Haro, J., Badajoz-Martínez, J. J., & Barceló-Acosta, A. (2010). Urolitiasis obstructiva en ovinos: estudio de caso. *Acta Universitaria*, 20(3): 34-39. <https://doi.org/10.15174/au.2010.51>
- Ismail, A. A., Amentie, T., Abdi, F. H., & Ahmed, A. A. (2024). Hygienic Production Practices and Microbiological Quality of Sheep Milk in Ararso District of Jarar Zone, Somali Regional State, Ethiopia. *International Journal of Veterinary Medicine and Animal Science*, 1(1), 64–73. <https://doi.org/10.54536/ijvm.v1i1.3562>
- King, J. M., Roth-Johnson, L., Dodd, D. C., & Newsom, M. E. (2013). The Necropsy Book. A Guide for Veterinary Students, Residents, Clinicians, Pathologists, and Biological Researchers. Cornell University.
- Lloyd, J., & Playford, M. (2013). A Producer's Guide to Sheep Husbandry Practices. Humaine Killing Meat & Livestock Australia Limited ABN.
- Makhdoomi, D. M., & Gazi, M. A. (2013). Obstructive urolithiasis in ruminants – A review. *Veterinary World*, 6(4): 233-238. <https://doi.org/10.5455/vetworld.2013.233-238>
- Mekonen, T., Markos, S., Esak, K., & Ataklti, T. (2024). Flock Dynamics, Production Challenges and Opportunities of Indigenous Goat and Sheep Populations in North Western and Western Zones of Tigray Region, Ethiopia. *International Journal of Veterinary Medicine and Animal Science*, 1(1), 32–45. <https://doi.org/10.54536/ijvm.v1i1.2975>
- Nair, S. S., Jennes, D., Hansoge, A., Ramankutty, S., Sainulabdeen, A., & Martin, K. (2022). Caprine obstructive urolithiasis – A review. *International Journal of Livestock Research*, 12(1): 1-11. <https://dx.doi.org/10.5455/ijlr.20211031064642>
- NRC. (1985). Nutrient requirements of sheep. 6th ed. Washington, DC: National Academy Press.
- Ramírez-Soria, M. A., Martínez, A., & Robles, C. A. (2020). Urolitiasis en pequeños rumiantes. *Revista Científica FAV-UNRC Ab Intus*, 5(2): 112-122. https://www.ayv.unrc.edu.ar/ojs/index.php/Ab_Intus/article/view/75/82
- Sickinger, M., & Windhorst, A. (2022). A systematic review on urolithiasis in small ruminants according to nutrition-dependent prevalence and outcome after surgery. *Veterinary World*, 15(3): 809-817. <https://doi.org/10.14202/vetworld.2022.809-817>
- VanMetre, D. C., & Divers, T. J. (2002). Diseases of the renal system: urolithiasis, In Large Animal Internal Medicine (Smith, B.P. (ed)). 3rd edition. Mosby.
- Vanselow, B. A. (1994). Obstructive urolithiasis in feedlot cattle. Australian Veterinary Association Annual Conference, March 1994. Published in the Proceedings of the Australian Association of Cattle Veterinarians, Canberra.
- Yohannes, G., & Tesfay, S. (2024). Review on surgical managements of urolithiasis in ruminants. *Mathews Journal of Surgery*, 7(1): 29-38. <https://doi.org/10.30654/MJS.10029>