

## ULTRASONOGRAPHIC DIAGNOSIS AND SURGICAL MANAGEMENT OF UROLITHIASIS IN A COWCALF

SANDEEP SAHARAN<sup>1</sup>, MADAN PAL<sup>2\*</sup>, DINESH<sup>2</sup>, SATBIR SHARMA<sup>1</sup> and DEEPAK TIWARI<sup>2</sup>

<sup>1</sup>Teaching Veterinary Clinical Complex, <sup>2</sup>Department of Veterinary Surgery and Radiology  
College of Veterinary Sciences, Lala Lajpat Rai University of Veterinary  
and Animal Sciences, Hisar-125 004, India

Received: 20.08.2015; Accepted: 03.11.2015

### SUMMARY

A cow calf of 3 month of age was brought to the Clinic with the history of urine retention since 3d. Animal was dull, depressed and anorectic with distended abdomen. On the basis of clinical signs and symptoms, it was suspected to be a case of urolithiasis. Accordingly, ultrasonography was performed to diagnose the urolith. Ultrasound examination of the urethra (post scrotal and prescrotal) was performed using a real time, B-mode diagnostic ultrasound with linear array transducer having frequency 5 MHz. Ultrasonography revealed appearance of hypoechoic concretions in the anechoic lumen of urethra within the pre- and post-scrotal urethra.

**Key words:** Cystotomy, Foley's catheter ultrasound, urolithiasis

Urolithiasis affects both sexes, but urethral blockade is a major problem only in males. Steers are most commonly affected by the obstructive urolithiasis because of the anatomical conformation of their urinary tract. Urolithiasis is common in winter in steers and withers on full feed or on range during severe weather conditions with limited water intake, especially when the water has a high mineral content. Silica, magnesium ammonium phosphate, calcium oxalates and calcium carbonates are the most common types of the crystals found in the ruminants. Urethral obstruction has been reported in ruminants (Divers *et al.*, 1989) and is a common problem encountered in male sheep, goat and cattle (Kushwaha *et al.*, 2009). Among the bovine species, buffalo calves (81.25%) suffered more frequently than the cow calves (9.82%) and bullocks (8.92%) (Kushwaha *et al.*, 2009). The calculi dislodged from bladder may get trapped in narrow male urethra especially at the site of sigmoid flexure or at preputial opening resulting in clinical signs related to urine retention, bladder distension, abdominal pain, urethral perforation or bladder rupture and subsequently death from uremia or septicaemia (Winter *et al.*, 1989; Loretti *et al.*, 2003).

A cow calf of 3 month of age was presented to the Clinic with the history of urine retention since 3

days. Animal was dull, depressed and anorectic with distended abdomen. Ultrasound examination of the urethra (post scrotal and prescrotal) was performed using a real time, B-mode diagnostic ultrasound with linear array transducer having frequency 5MHz. For the scanning of pre-scrotal urethra enough gel was applied on linear probe and probe was placed over the urethra and moved from preputial orifice up to the scrotum. For the scanning of postscrotal urethra, the linear probe was placed just behind the scrotum and moved up to the ischial arch. The hypoechoic concretions were diagnosed within the anechoic lumen of urethra pre- as well as post scrotally.

On the basis of clinical signs and ultrasonographic findings, surgery was performed by restraining the animal in right lateral recumbency. The site of operation was prepared, the operative area was locally infiltrated with 2 ml of 2% lignocaine hydrochloride solution in between rudimentary teats and tube cystotomy was performed in the right lateral recumbency through paramedian approach. The urinary bladder was located after separating subcutaneous tissue and muscles by blunt incision and status of bladder was checked. In the present case urinary bladder was intact and also diagnosed ultrasonographically as anechoic structure full of urine (Fig.1).

A Foley's catheter was introduced in the urinary

\*Corresponding author: drmadanlega@gmail.com

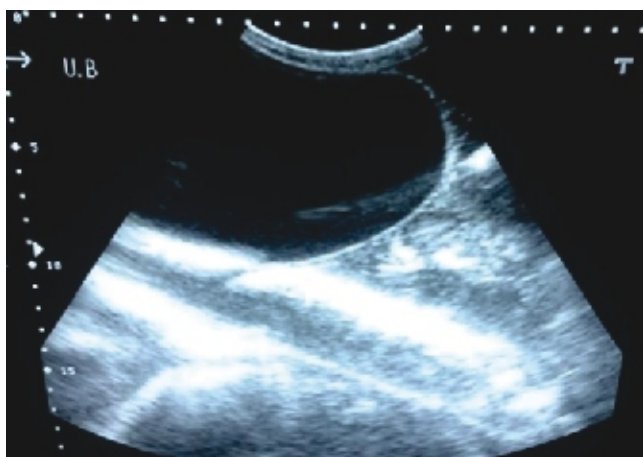


Fig 1. Ultrasound showing the anechoic fluid in the lumen of intact urinary bladder full of urine.



Fig 2. Foley's catheter passed through the subcutaneous tunnel and secured in abdominal skin with stay suture and free flow of urine through catheter.

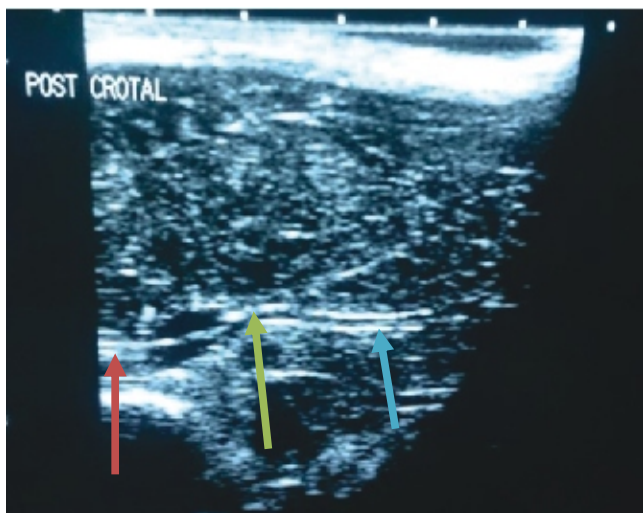


Fig 3. Ultrasound showing the hypoechoic concretions (red arrow) in anechoic lumen of urethra (green arrow), post scrotal with hyperechoic wall of urethra (blue arrow).

bladder in oblique direction using hard stent (blunt pointed object) of suitable size and the balloon proximal end was inflated by infusing 10 ml of water to keep catheter inside the bladder till the animal recovered (Fig. 2). Postoperatively, the calf was administered cefotaxime (10 mg/kg b wt i.m.), ketoprofen (2mg/kg b wt i.m.), amikacin (4mg/kg b wt i.m.) daily for 5 days and antiseptic dressing of the suture line was done with povidone-iodine solution and scavon spray for 14 d. To dissolve the concretions, ammonium chloride (urinary acidifier) was recommended @ 50 gm daily for 20 d. Animal recovered uneventfully after 10 days and started passing urine through natural passage. The urinary passage gets obstructed due to lodgement of the concretions and calculi in the urinary passage. The present case was also of the urinary concretions obstructing the urinary passage diagnosed by the ultrasonography as hypoechoic structure pre as well as post scrotal urethra (Fig. 3). Similar findings were observed by the Khan *et al.* (2013) and Saharan *et al.* (2013) in buffalo's calf suffering from urolithiasis.

## REFERENCES

- Divers, T.J., Reef, V.B. and Roby, K.A. (1989). Nephrolithiasis resulting in intermittent urethral obstruction in cow. *Cornell Vet.* **79**:143.
- Khan, M.A., Makhdoomi, D.M., Gazi, M.A., Sheikh, G.N. and Dar, S.H. (2013). Clinico-sonographic evaluation based surgical management of urolithiasis in young calves. *African J. Agric. Res.* **8(48)**:6250-6258.
- Kushwaha, R.B., Amarpal, Kinjavdekar, P., Aithal, H.P., Pawde, A.M. and Pratap, K. (2009). Urolithiasis in buffalo calves: a review of 91 cases. *Indian J. Vet. Sur.* **30(1)**: 9-12.
- Loretti, P.A., Oliveria De, L.O., Cruz, C.F. and Driemier, D. (2003). Clinical and pathological study of an outbreak of obstructive urolithiasis in feed lot cattle in south Brazil. *Pesq. Bras.* **23**: 233-236.
- Saharan, S., Singh, P., Sahu, R., Chawla, S.K. and Chandolia, R.K. (2013). Ultrasonographic studies on obstructive urolithiasis in male buffalo calves. *Indian J. Vet. Surg.* **34(1)**: 51-53.
- Winter, R.B., Hawkins, L.L., Holterman, D.E. and Jones S.G. (1987). Catheterization-An effective method of treating bovine urethral calculi. *Vet. Med.* **82**:1261-1266.