THE ANNUAL CONGRESS of the
Nigerian Veterinary Medical Association

MINNA 2006

Theme:
Harnessing Livestock Resources in an Emerging Nigerian Economy.

Date: 6th -10th November, 2006
Venue: Gidan Matasa, Matasa Avenue, Okada Road, Minna, Niger State, Nigeria
Edited by Fasanya, O. O. A; Garba, H. S.; Remi-Adewunmi, B. D., Hassan Z. and Bukan, M.

ISSN 0331-3026
SURGICAL CORRECTION OF AN ATRESIC ECTOPIAN BLADDER AND EPITHELIODYSEYSIS IMPERFECTA IN A FRIESIAN-ZEBU CROSSBRED BULL CALF

Awasum, C. A.1, Sackey, A. K. B.1, Salami, S. O.1, Sambo, S. J.3, Ibrahim, N. D. G.2, Didel, M.1, Obijiku, I. N.1, Mairabu, R. R.1 Esievo, K. A. N.2 and Hassan, A. Z1

1Department of Veterinary Surgery and Medicine, Ahmadu Bello University Zaria Nigeria,
2Department of Vet Anatomy Ahmadu Bello University Zaria, 3Department of Pathology Ahmadu Bello University Teaching Hospital Zaria

* Correspondence

ABSTRACT

A 3-day-old Friesian-Zebu cross bull calf weighing 30kg was presented to the Large Animal Clinic Unit of Veterinary Teaching Hospital, Ahmadu Bello University (ABUVTH) Zaria, with the chief complaint of inability to urinate since birth, and for a surgical correction of a bladder-like mass (diameter of 18 cm) protruding from the perineal midline extending 5 cm to the left lateral of an area with incomplete skin (Epitheliogenesis Imperfecta) formation and coverage. The calf was weak and inactive. History revealed that the calf had a surgical correction of an atresia ani 2 days prior to presentation. Further history revealed that attempts were made to relieve the calf of the inability to urinate and as well as to surgically correct the epitheliogenesis imperfecta. Differential diagnoses included cutaneous cyst, urinary bladder diverticulum and urinary bladder dilatation. Blood sample was taken for haematological evaluation and for haemoparasitic screening. Urine sample was collected for urinalysis, microscopy, culture and sensitivity. Cystography was also intended.
Management was based on stabilization and surgical housing and catheterization (permanent drainage) of the ectopic urinary bladder and correction of the epitheliogenesis imperfecta. The engorged urinary bladder containing blood-tinged urine was drained via fine needle aspiration and by catheterization until fresh transparent urine was seen oozing from the permanent drains. The calf was stabilized with 600 ml of Dextrose (100ml of 50% and 500ml of 5% Dextrose) solution. It was fed and maintained ad libitum on warm enriched milk. The calf regained activity but four days post surgery, the calf was found dead. Necropsy revealed several genitourinary abnormalities; double atresic urinary bladder. The ectopic urinary bladder was haemorrhagic and contained blood tinged urine and blood clots extending to an ambiguous aplastic prepuse with hypoplastic penis devoid of the sigmoid flexure. An aplastic left-sided scrotal sac containing a hypoplastic testicle was retained in the inguinal canal. The epitheliogenesis imperfecta measured 12 cm in length by 5 cm width from the midline of the perineum to the umbilicus. The carcass was pale; there was hepatomegaly with fatty change, pulmonary oedema with frothy exudates in the trachea and bronchi. The case illustrates multifaceted congenital anomalies consisting of unilateral cryptorchidism, aplastic urethra and atresia ani not likely associated with Friesian-Zebu cross. The cause of these multifaceted congenital anomalies is not known.

KEYWORDS: Surgical Correction, Atresic, Ectopic, Urinary Bladder, Friesian-Zebu, Bull Calf

HISTORY

A 3-day-old Friesian-Zebu cross bull calf weighing 30kg was presented to the Large Animal Clinic Unit of Veterinary Teaching Hospital, Ahmadu Bello University (ABVUTH) Zaria, with the chief complaint of inability to urinate since birth, and for a surgical correction of a bladder-like mass (diameter of 18 cm) protruding from the perineal midline extending 5 cm to the right lateral of an area with incomplete skin (Epitheliogenesis imperfecta) formation and coverage. The calf was weak and inactive. History revealed that the calf had a surgical correction of an atresia ani a day prior to presentation. Further history revealed that attempts were made to relief the calf of the inability to urinate and as well, surgically correct the epitheliogenesis imperfecta.

On physical examination, the vital parameters were: temperature 40.4 (38-40.5) °C, the pulse (100-120 beats/ minute) and the respiratory (20-30 cycles/minute) rates were quite rapid in comparison to the normal in brackets. The thorax was auscultated to ascertain the state of the lung and heart. Other clinical signs were pale ocular and oral mucous membranes, dry muzzle, fever, mild dehydration, hyperpnoea, tachycardia, weakness, stenally recumbent, unilateral left-sided cryptorchidism, matted perineum with pasty faeces, ectopic atresic urinary bladder, epitheliogenesis imperfecta, aplastic prepuse and a hypoplastic penis. The stump of the umbilical cord was seen as a blackish tape 5cm cranial to the aplastic prepuse.

Differential diagnoses included cutaneous cyst, urinary bladder diverticulum and urinary bladder dilatation. Further diagnostic and management plan was to stabilize the calf, decrease the turgidity of the bladder by percutaneous catheterization, conduct a routine laboratory evaluation, and evaluate the bladder architecture by performing a Cystography. Transformation of the rectangular defect and perform a linear closure.

MANAGEMENT:

While the calf was being stabilized with 600 ml of Dextrose (100ml of 50%, and 500ml of 5% Dextrose) solution, it was physically examined. 4 ml of blood was collected for haematological examination. The hair around the region of the ectopic urinary bladder and the epitheliogenesis imperfecta was clipped liberally and aseptically scrubbed with 2% chlorhexidine solution. The calf was placed on a dorsal recumbency with both hind limbs abducted.

Anaesthesia

30 ml epinephrine based 2% lidocaine hydrochloride solution was infiltrated intradermally to achieve a local rectangular block around the region of the ectopic urinary bladder and the epitheliogenesis imperfecta.

Following anaesthesia, 160ml blood-tinged urine was aspirated from the turgid ectopic urinary bladder. This was to create flaccidity in order to manipulate the bladder and to reduce the risk of inadvertently, surgically incising into the bladder. The skin on the right side of the defect was debrided and dissected to create a pedicle flap large enough to close the defect. Debridement was essential to
sharpen the edges of the skin, excise the 10 cm cartilaginous tissue, which formed aponeurosis with the skin of the right side at the midline of the ventral perineum, and to create raw surfaces, which will assist adhesion during healing post surgical closure to house the ectopic urinary bladder.

The defect was closed with 2-0 silk in a horizontal mattress suture pattern beginning from the caudal most aspects and progressed cranially to about 7cm to the end of the defect. The ectopic urinary bladder was perforated and an improvised prosthetic (a 15 cm drip set catheter with perforations on the walls) device inserted into the bladder cavity and per cutaneously allowed to drain to the out side just 3 cm to the apex of the vestigial prepuce. The catheter was firmly sutured to the bladder wall and the skin, ensuring that there was no leakage. The cranial 7 cm defect was closed as described above, to complete the skin closure. The surgical site was cleaned with 2% chlorhexidine solution and sprayed with 5% oxytetracycline spray. A few minutes post cutaneous closure, fresh transparent urine was seen oozing out through the catheter.

The calf was fed and maintained ad libitum on warm enriched artificially manufactured milk and hospitalized. Postoperative medications besides the energy-based fluids were procaine penicillin 20000iu/kg, streptomycin 20mg/kg and multivitamin 1ml to be administered for 5 days intramuscularly. Wound dressing was routine. This regimen was only maintained for 3 days. The mean post surgical vital parameters (n=3) were temperature 38.40°C, Pulse rate 102 beats/minute and respiratory rate 35cycles/minute. The vital parameters dropped on day 3 post surgery to 37.90°C, 52 beats/minute and 34 cycles/minute. At this period the calf rejected the milk on which it was fed. The gait was staggering with progressive weakness and dyspnoea.

RESULTS
The vital parameters were on the high normal. There was slight tachycardia, moist rales was felt in the lungs. The calf was anaemic although the haemograms could not be gotten due to clotting of the samples sent to clinical pathology. Serum creatinine level was normal 71mmol/L (9-126). Microbiology study revealed E.coli from the urine culture. Fresh urine was seen oozing out through the catheter. The pedicle flap used to close the ectopic urinary bladder was adequate and closure of the defect was uneventful. The calf regained activity but four days post surgery, the calf was found dead.

DISCUSSION
The high normal vital parameters were accompanied by mild fever due to associated complications. The stress due to of previous surgery and the difficult defecation due to the atresia ani also aggravated the problem. The normal Sc level indicated that the kidney was functional and the active physiological activity was not hampered by the retained urine in the urinary bladder. Otherwise one would imagine that a hydrenephrosis would ensue as the bladder was engorged with urine. King, Young and Fox (2002) reported a similar condition though ectopic urinary bladder is a rare finding, as well as Epitheliogenesis imperfecta. Usually accompanying these conditions are bladder duplication and associated congenital anomalies, which have been reported by Oliaa-Owiti et al. (1996); Bannykh et al. (2000) and King, Young and Fox. (2002) in Kenya-Africa, San Diego-Latin America and Illinois-USA, respectively.

The surgical repair of the defect was adequate as well as the post surgical follow-up. The calf actually regained activity although the vital parameters gradually decreased and the calf died four days later. The post mortem report revealed multiple congenital problems besides the ectopic urinary bladder and the Epitheliogenesis imperfecta. The death of the calf could be attributed to the multifaceted congenital anomalies. Epitheliogenesis imperfecta is a genetic defect common in certain breeds of horse (e.g. Belgians, Quarter and Saddled breeds) and rare in other breeds of animals (The Genetic Endowment, 1999). It is a recessive hereditary neonatal disease with autosomal recessive inheritance reported in Belgian foal (Tontis and Hofstetter, 1991).

It has been found in unknown breeds of animals in Germany, found in cattle and in Ardennes foal in Sweden as well as in draft horses (The Genetic Endowment, 1999 and Lisa, 2000). It was first discovered in American Saddlebreds, it is incompatible to life and euthanasia is recommended for infected foals depending on the severity (The Genetic Endowment, 1999 and Cothran, Lieto, and Swerczek, 2002). The genetic status of progenies from carrier parents is in the ratio of 1:2:1 and single parent carriers do not pass down the disease (Cindy, 1999 and Sellnow, 1997). Similar disease have been reported in humans referred to as Epidermolysis bullosa or aplasia cutis congenita (Merck Veterinary Manual, 2005 and Milenkovic et al., 2002).
Plate 1: The rectangular defect (18x5 cm); (A) shows the ectopic urinary bladder, (B) shows the cartilaginous edge of the defect at the ventral mid line of the groan and the perineum.

Plate 2: Debridement of the defect and dissection to create a pedicle flap, which would be used for the surgical housing of the ectopic urinary bladder.

Plate 3: Post-surgical closure of the defect post percutaneous catheterization and housing of the ectopic urinary bladder. The bluish discoloration is due to the oxytetracycline spray used for wound healing.

ACKNOWLEDGEMENT

We acknowledge the assistance of Mr Mbella Esukise and all who assisted in one way or the other to see that the research got to a successful conclusion.

REFERENCES


