Nephro-cutaneous fistula in a dog

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ABSTRACT

Nephro-cutaneous fistula, although reported in humans, has not been reported in the dog. In humans the majority of cases develop in patients with a history of previous renal surgery, renal trauma, renal tumours, or chronic urinary tract infection with abscess formation. The dog in this report developed a nephro-cutaneous fistula secondary to a traumatic induced renal abscess with formation of a draining sinus tract to the exterior of the body. The animal underwent simple nephrectomy, which resulted in complete resolution of the fistula.

Key words: canine, kidney, nephrectomy, sinus tract.


INTRODUCTION

Nephro-cutaneous fistulas usually occur as complications of surgical procedures on the kidney, renal trauma (penetrating or iatrogenic), renal uroliths, tumours and chronic urinary tract infections with formation of peri-renal abscesses1,3,4,5. Peri-renal abscesses can develop either from organs adjacent to the kidney or from the kidney itself. An abscess usually develops by extension of a urinary tract infection to the adjacent tissues, either by contiguity or by lymphatic route. Alternatively, abscesses can originate from an urinoma or urinary pseudocyst, which arise as result of external or surgical trauma to the kidney, promoting loss of continuity between it and the surrounding tissues6. A purulent discharge may be present at the cutaneous site of the fistula6.

In humans, spontaneous renal fistula to adjacent organs is not an uncommon phenomenon. However, the spontaneous communication between kidney and skin is rare and few cases are described in the literature2,3,5,6. The majority of cases reported in the medical literature are associated with chronic urinary tract infection secondary to renal stones2,3,5,6. Fistulas can develop between the kidney and the pleural cavity, lungs and bronchia, bowel, and skin. The latter are, however, rare, and whenever they occur, they typically involve patients with a past history of renal surgery7. The majority of fistulas present with spontaneous drainage through the lumbar region following those points with lowest resistance such as the lumbar triangle and the lumbar quadrilateral, establishing a fistulous pathway that communicates the peri-renal tissues and collecting system with the external environment7,8.

In humans, therapeutic approaches are based on renal function and on the patient’s ability to tolerate a surgical procedure and can include total nephrectomy, partial nephrectomy or antibiotic therapy9,10. Surgical removal of the affected kidney results in satisfactory resolution of the fistula1.

To the authors’ knowledge this is the 1st report of a nephro-cutaneous fistula in the dog.

CASE HISTORY

A 1-year-old, intact male maltese cross was referred for evaluation of recurrent abscess formation with a draining sinus tract in the right flank. At 4 months of age the animal had been in a motor vehicle accident, which had resulted in a right femur fracture, luxation of the right hip, and severe soft tissue injury in the right flank. The fractured femur and luxated hip were surgically corrected and the dog recovered uneventfully. Over the following 6 months, however, the dog developed a recurrent right flank draining sinus tract, which was managed by means of surgical drainage and antibiotic therapy. Pseudomonas aeruginosa was cultured from the area on 2 occasions.

On clinical examination the dog was bright and alert, rectal temperature was normal, and a draining sinus tract was present in the right flank. On abdominal ultrasonography a fluid-filled anechoic structure in the right mid-to-caudal abdomen was evident below the draining sinus tract. The right kidney could not be identified and the left kidney was enlarged. Purulent material was aspirated from the fluid-filled structure. Cytology of the fluid showed necrotic cells, degenerative neutrophils and macrophages. Full urine analysis was within normal limits. On exploratory laparotomy the right kidney was observed to be reduced to a thickened capsule containing purulent material, which was communicating with the draining sinus tract in the right body wall. The right kidney, ureter, and sinus tract were completely excised. Histopathology confirmed renal tissue with metaplastic ossification and a pyogranulomatous inflammatory reaction.

The animal made an uneventful recovery from surgery and 11 months after the nephrectomy there has been no further sinus tract formation. On a telephonic report the owner reported that the dog was clinically well and has shown no evidence of renal disease (polyuria, polydipsia, or weight loss).

DISCUSSION

Nephro-cutaneous fistula in humans is a rare condition and to the authors knowledge this is the 1st report in the dog. In humans, nephro-cutaneous fistula is associated with chronic urinary tract infection and nephrolithiasis11, often secondary to trauma. In this case it is most likely that the nephro-cutaneous fistula was secondary to a renal abscess that arose as a result of external trauma to the kidney that occurred when the dog was hit by a car. A draining sinus tract to the exterior of the body subsequently developed. An infectious process was demonstrated by means of repeated bacterial culture. In this dog, evaluation of renal function was not undertaken as there were no clinical signs of compromised renal function and urine analysis was within normal limits.

In this case the diagnosis was suspected on the basis of ultrasonography – the presence of an anechoic fluid-filled structure in the region of the right kidney and under the draining sinus tract, absence of the right kidney, and enlargement of the left kidney. The latter was ascribed to compensatory hypertrophy. In humans the diagnosis is based on CT enhanced

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with contrast material and/or a sonogram, as the affected kidney is often non-functional. The use of MRI sinography has also been reported.

As in humans, surgical removal of the affected kidney resulted in complete resolution of the fistula in this dog.

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REFERENCES

Book review – Boekresensie

**Plant poisonings and mycotoxicoses of livestock in Southern Africa – 2nd edition**

By T S Kellerman, J A W Coetzee, T W Naudé and C J Botha


The 1st edition of this book was published in 1988. It was the 1st comprehensive book on the plant poisonings and mycotoxicoses of livestock in southern Africa. Douw Steyn published the only other book on this subject, *The Toxicology of Plants in South Africa* in 1934. The 1st edition of *Plant Poisonings and Mycotoxicoses of Livestock in Southern Africa* has been very popular and widely used by veterinarians, toxicologists, researchers and students. It became the reference work for plant poisonings and mycotoxicoses in the region and went out of print after 2 reprints.

Southern Africa arguably has the richest flora in the world and most of our 600-odd poisonous plants are unique to southern Africa. Since our poisonous plants are largely unknown outside the continent, institutes and universities abroad can contribute very little to our knowledge on the subject. We must therefore address the problems caused by our plants and fungi from an African perspective.

Nowhere in the world have plant poisonings a proportionally greater impact on livestock production than in southern Africa. According to a report published in 1996, the annual mortalities from these poisonings in South Africa ran to c. 37 665 head of cattle and 264 851 small stock. The annual total cost of plant poisonings/mycotoxicoses to the livestock industry of the country was conservatively estimated at R105 million. These figures of course did not include hidden losses such as diminished production, reproductive failure, and the cost of not utilising toxic pastures and the drop in the value of infested land.

Most of the research on plant poisonings and mycotoxicoses of the southern African region was carried out by researchers at the Onderstepoort Veterinary Institute. Sir Arnold Theiler, the founder of the institute had amongst his other interests, a keen interest in plant poisonings. He published work on 'Gouw-Ziekte' in sheep during 1906 and followed that by publications on 'Dunziekte' and 'Jagziekte' in horses as well as 'Geeldekkop' in sheep in 1918. Douw Steyn was the 1st veterinarian to join the staff of the Toxicology Division at the Onderstepoort Veterinary Institute in 1926. For the next 60 years only 3 other toxicologists, namely Tom Adelaar, Theuns Naudé, and Fanie Kellerman headed the Division of Toxicology. These great mentors trained aspiring toxicologists. In the modern era, mentoring has become a problem and the 2nd edition of this book will ensure that current and future researchers can use the wealth of information accumulated over 100 years.

For the 2nd edition of *Plant Poisonings and Mycotoxicoses of Livestock in Southern Africa*, the content has been thoroughly updated to include all the research and reports of clinical cases of poisoning recorded in the last 17 years since the publication of the 1st edition. It is now a 320-page handbook compared to the 243 pages of the 1st edition. More than 300 new references were included in the new publication. The quality of the 66 distribution maps of the plants and the quality of the 380 colour photographs has also been improved. For each intoxication, the causative agent is described and depicted in colour. Distribution charts are given and detailed information is supplied on the toxicology, chemistry, clinical signs and pathology of the conditions. Particular emphasis is placed on the pathology, as this is often vital in making a diagnosis.

The authors used the same unique layout of the 1st edition. Plant poisonings and mycotoxicoses are grouped according to the system of the body that is affected and not according to the taxonomy of the plants. This has been done for ease of consultation as veterinarians first determine which system is affected before making differential diagnoses. All syndromes are therefore grouped in one of 8 chapters namely: liver, central nervous system, cardiovascular system, gastrointestinal tract, urogenital system, respiratory system, haemoapoietic system and skin and adnexa. The layout has profoundly influenced the structure of toxicology courses in our regional veterinary schools. The book also has a significant affect on veterinary practice not only in southern Africa but in all Africa; for without being able to distinguish plant poisonings from infectious diseases and other conditions an effective diagnostic service cannot be rendered on our continent.

The 2nd edition of *Plant Poisonings and Mycotoxicoses of Livestock in Southern Africa* has proved its value within a month of being released. A number of outbreaks of perennial ryegrass toxicity occurred in South Africa during December 2005. This condition, which is common to New Zealand, was first diagnosed in South Africa after the 1st edition had been published. In the 2nd edition the syndrome is fully described in Chapter 2 where the central nervous system disorders are described. Private practitioners and toxicologists could consult the book and diagnose the disease.

*Plant Poisonings and Mycotoxicoses of Livestock in Southern Africa*, 2nd edition, is a quality reference work and a ‘must have’ for veterinarians, toxicologists, students and researchers in this field.

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