PYELONEPHRITIS IN A MATURE GELDING WITH AN UNUSUAL
URINARY BLADDER FOREIGN BODY: A Case Report

Heidi Hamlen, DVM, MS

INTRODUCTION

Chronic septic pyelonephritis is an uncommon disease entity in the mature horse. It may be seen as a consequence of urolithiasis, trauma, or neurological disease of the urinary tract predisposing to secondary, ascending bacterial infections.\(^1\) Mares and females of other species have a higher incidence of ascending urinary tract infections due to the anatomically shorter distance between the external environment and the urinary bladder. This case represents a rare finding of pyelonephritis and hydronephrosis in a mature gelding where the predisposing cause was a urinary bladder foreign body.

CASE HISTORY

A 10 year old pony gelding with a 3 week history of anorexia, decreased water intake, and bruxism was seen by the Ambulatory Section of the New York State College of Veterinary Medicine. The pony was not current in vaccinations and had a history of adverse reactions to vaccinations. Physical examination revealed the pony to be febrile (38.6°C), mildly dehydrated, depressed, and voiding small amounts of urine repeatedly. Oral mucous membranes were dull yellow in color. Blood was collected for hematologic and serum biochemical analysis (Table 1, Day 1) and results suggested azotemia, hyperglobulinemia, hypalbuminemia, and hypophosphatemia. The WBC count was elevated with a mature neutrophilia. A normochromic, normocytic nonregenerative anemia was present. Urine specific gravity was 1.032 and numerous gram positive cocci and WBCs were observed microscopically in the urine. A clinical diagnosis of septic pyelonephritis was made, and a poor prognosis was given. The client chose to attempt antimicrobial therapy. Procaine penicillin G (17,000 u/kg) was administered intramuscularly twice daily. The client reported daily improvement in water and feed intake, and in attitude. On Day 5 of treatment, physical examination revealed the pony to be afebrile, well hydrated, and in good spirits. His mucous membranes remained dull yellow in color. Serum biochemical analysis revealed that the azotemia was improved (Table 1, Day 5) suggesting a role for prerenal factors in his presenting azotemia.\(^4\) The pony continued to progress well until Day 11 of antimicrobial therapy when he experienced a sudden onset of anorexia and depression. Physical examination revealed the pony to be febrile (39.1°C), depressed, and tachypneic. The right eyelid was swollen and blepharospasm was observed. Ophthalmologic examination was unremarkable and a diagnosis of superficial ocular trauma was made. A serous nasal discharge was noted, however thorough auscultation of
the lung fields and trachea revealed no adventitial sounds. Blood was collected for hematologic examination and results suggested progression of the nonregenerative anemia (Table 1, Day 11). Urinalysis revealed a sp gr of 1.005 with trace hemolyzed blood and numerous erythrocytes microscopically. The oral mucous membranes remained dull yellow in color. A tentative diagnosis of upper respiratory viral infection was made and antimicrobial therapy to treat the pyelonephritis was continued. On Day 12 the pony continued to refuse food and water, remained depressed, and began open mouth breathing. Physical examination revealed crusts excrude on the muzzle and a frothy, mucoid, yellow oral discharge was observed. Phenylbutazone (2 gr P.O.) was administered in attempts to relieve nasal mucosal swelling, and antimicrobial therapy was continued.

On Day 14 the pony was examined when the client reported that he was repeatedly attempting to rub his face against the stall walls. Physical examination revealed the pony to be depressed and dehydrated with erosions of the mucocutaneous junctions of the prepuce, anus, nares, and mouth. The pony’s tongue was denuded of epithelium which was shed as intact sheets of flesh. A clinical diagnosis of drug reaction to procaine penicillin G was made, and its administration was discontinued. Intravenous fluid therapy with normal saline was instituted and antimicrobial therapy with Tribrissen™ (9.6 gr P.O. daily) was begun. Blood was collected for hematologic and serum biochemical analysis and demonstrated a marked leukopenia and neutropenia (Table 1, Day 14). Biopsies of the oral mucocutaneous junctions revealed neutrophilic infiltration without a lupus band, and failed to support an immune-mediated skin disease such as pemphigus or systemic lupus erythematosus (SLE). Serum immunoelectrophoresis was within normal limits.

The pony was maintained on intravenous fluid therapy, Tribrissen™, and phenylbutazone for 4 days and monitored for serum biochemical and hematologic changes (Table 1, Days 15, 17 and 20). The azotemia resolved and the leukopenia and neutropenia gradually improved. Urinalysis continued to reveal WBCs (20-100/hpf), trace blood (<5 RBC/hpf), and proteinuria (100mg%). Clinically, the pony remained afebrile, was less depressed, and resumed water intake. The mucocutaneous erosions resolved and he was fed bran mash ad lib. Over the course of several months the pony continued to void small amounts of urine repeatedly, and suffered from recurrent uveitis and urticaria. Hematologic and serum biochemical changes were monitored (Table 1, Days 28, 27, 49) and suggested continued hypoalbuminemia and nonregenerative anemia. Treatment, other than for the recurrent uveitis, was declined by the client due to the pony’s past history of drug reaction.

Four months after his initial presentation, the pony was donated to the Veterinary Teaching Hospital for a thorough diagnostic work-up. Of primary concern was the nature of his unusual drug reaction to procaine penicillin G, which resembled immune-mediated skin diseases such as pemphigus vulgaris and SLE. It was thought that biopsies done at the time the mucocutaneous erosions were seen may have been too late to detect the inciting immunopathogenic mechanism through immunofluorescence studies. Scratch testing using Na penicillin, procaine, penicillin G, and diluent followed by biopsy at 30 minutes and 3 hours was done. However, histologic examination and immunofluorescent studies on the biopsy material failed to support a diagnosis of immune-mediated skin disease.

The geldings chronic, septic pyelonephritis was evaluated by ultrasound examination of the kidneys and rectal palpation. Ultrasound revealed an abnormal right kidney with a grossly dilated renal pelvis, and a hyperchoic renal cortex with irregular contour. The left kidney could not be located. Rectal palpation suggested atrophy of the left kidney, and difficulty palpating the urinary bladder.

Post mortem examination
The right kidney was approximately 3 times normal size (1825 gr) and the left kidney was atrophied (100 gr). The ureter walls were thickened to 7 mm and the urinary bladder...
The weight of the fibrotic tissue and foreign body positioned the urinary bladder in the pelvis such that diagnosis by rectal palpation was difficult. Regardless of the predisposing cause, the prognosis for recovery from chronic pyelonephritis is poor. Interestingly, the resolution of the pony’s azotemia and his ability to concentrate urine in the face of dehydration (Table 1, Day 20) demonstrates the tremendous compensatory capabilities of the renal system. However, a significant degree of renal disease may exist in animals able to concentrate their urine to a sp gr of 1.025.

This case demonstrates the difficulty in promptly diagnosing a drug reaction while managing a challenging case in the field. The anorexia, depression, hematuria, and worsening nonregenerative anemia seen with the onset of the drug reaction (Day 11) may all be seen with pyelonephritis. The clinical signs associated with the respiratory tract and mucocutaneous junctions were unusual manifestations of drug reaction in the horse, and have not been previously reported in the literature. Procaine penicillin G has been implicated, however, in a variety of adverse drug reactions. Although the pony’s drug reaction demonstrated similarities to the dermal manifestations of SLE seen in man and dogs, drug-induced SLE seen in man, and pemphigus complex seen in man, dogs and horses, we were unable to support an immune-mediated diagnosis by renal or skin biopsy immunofluorescence studies. The pony suffered from numerous immunologically-mediated phenomenon (drug reaction, recurrent uveitis, edema, urticaria) and it is unknown what role the presence of the large foreign body in the urinary bladder may have played in the aberrant immune responses.

REFERENCES


Reprinted from Journal of Equine Veterinary Science
Volume 13, No. 3, 1993

162