Hematuria indicates the presence of urogenital disease in dogs and cats. Persistent hematuria (macroscopic or microscopic) should be evaluated to determine the source of bleeding and the underlying cause so that appropriate treatment can be recommended. Results of the history and physical examination often help to localize disease to the urinary tract (either upper or lower) or genital tract. Additional diagnostic evaluation, including laboratory testing (eg, urinalysis, urine culture), diagnostic imaging (eg, abdominal radiographs, ultrasound), and collection of tissues for cytologic or histopathologic evaluation, may be needed to identify the underlying cause. If a thorough evaluation fails to reveal the source or cause of hematuria, exploratory celiotomy should be considered, especially if idiopathic renal hematuria is possible.

The main goal of early diagnosis of renal disease and renal failure in dogs and cats is to enable timely application of therapeutic interventions that may slow or halt disease progression. Strategies for early diagnosis of renal disease use urine tests that detect proteinuria that is a manifestation of altered glomerular permselectivity or impaired urine-concentrating ability as well blood tests to evaluate plasma creatinine concentration. Animals with progressive renal disease should be carefully investigated and treated appropriately. Animals with mild, possibly nonprogressive, renal disease should be monitored adequately to detect any worsening trends, which should lead to further investigation and treatment even if the increments of change are small.
Renal Biopsy: Methods and Interpretation
Shelly L. Vaden

Renal biopsy most often is indicated in the management of dogs and cats with glomerular disease or acute renal failure. Renal biopsy can readily be performed in dogs and cats via either percutaneous or surgical methods. Care should be taken to ensure that proper technique is used. When proper technique is employed and patient factors are properly addressed, renal biopsy is a relatively safe procedure that minimally affects renal function. Patients should be monitored during the postbiopsy period for severe hemorrhage, the most common complication. Accurate diagnosis of glomerular disease, and therefore, accurate treatment planning, requires that the biopsy specimens not only be evaluated by light microscopy using special stains but by electron and immunofluorescent microscopy.

New and Unusual Causes of Acute Renal Failure in Dogs and Cats
Jennifer E. Stokes and S. Dru Forrester

This article provides a source for easy reference, summarizing in one location newly recognized and unusual causes of acute renal failure (ARF) in dogs and cats. Several of the causes discussed in this article have been described previously. New or unusual causes of ARF in dogs and cats include infectious diseases (leptospirosis, borreliosis, and babesiosis), nephrotoxicants (aminoglycosides, vitamin D, and nonsteroidal anti-inflammatory drugs), and plant material (lilies and raisins/grades).

Diagnosis of Urinary Tract Infections
Joseph W. Bartges

Urinary tract infections (UTIs) are a common cause of urinary tract disease and may be associated with systemic disease. Diagnosis cannot be made on urinalysis and other findings alone. A urine culture is the “gold standard” for diagnosis of UTI. Antimicrobial susceptibility testing performed as part of a urine culture aids in selection of appropriate treatment for patients with confirmed bacterial UTI.

Veterinary Hemodialysis: Advances in Management and Technology
Julie R. Fischer, Valeria Pantaleo, Thierry Francey, and Larry D. Cowgill

Hemodialysis (HD) is a renal replacement therapy that can enable recovery of patients in acute kidney failure and prolong survival for patients with end-stage kidney failure. HD is also uniquely suited for management of refractory volume overload and removal of certain toxins from the bloodstream. Over the last decade,
veterinary experience with HD has deepened and refined and its geographic availability has increased. As awareness of the usefulness and availability of dialytic therapy increases among veterinarians and pet owners and the number of veterinary dialysis facilities increases, dialytic management will become the standard of advanced care for animals with severe intractable uremia.

Update: Management of Calcium Oxalate Uroliths in Dogs and Cats 969
Joseph W. Bartges, Claudia Kirk, and India F. Lane

Calcium oxalate has become the most common mineral occurring in canine and feline uroliths. Although calcium oxalate urolith formation may be a consequence of metabolic disease, the underlying cause is not identified in many dogs and cats. Currently, there is no successful medical dissolution protocol, and calcium oxalate uroliths must be removed physically if causing problems. Effective preventative protocols are available for dogs and cats, although they are not uniformly successful.

Management of Ureteral Obstruction 989
Elizabeth M. Hardie and Andrew E. Kyles

The most common cause of ureteral obstruction in dogs and cats is ureteral calculi. Common clinical signs associated with ureteral obstruction include abnormalities in urination, persistent urinary tract infection, abdominal pain, vomiting, anorexia, weight loss, and depression or lethargy. Medical management of ureteral obstruction includes fluid diuresis, muscle relaxants, and treatment of azotemia using nephrostomy tubes or hemodialysis. Surgical techniques used to restore patency to the ureter include ureterotomy, partial ureterectomy and ureteroneocystostomy, and ureteral resection and anastomosis. Lithotripsy has been used in dogs to remove ureteral calculi. Renal function can be preserved if complete ureteral obstruction is relieved within several days of onset.

Lithotripsy: An Update on Urologic Applications in Small Animals 1011
India F. Lane

Lithotripsy methods for fragmenting uroliths continue to evolve. Increasing access to and experience with newer generation lithotriptors and continued study of laser methodology are likely to increase the application of lithotripsy methods in small animal urology. For small animals in which intervention is recommended for progressive, symptomatic, infected, or obstructive uroliths, nonsurgical extracorporeal or intracorporeal lithotripsy methods may be considered.
Urine Culture as a Test for Cure: Why, When, and How?  1027
Jody P. Lulich and Carl A. Osborne

Quantitative urine culture before initiation of antimicrobial therapy is considered to be the gold standard for diagnosis of bacterial urinary tract infections (UTIs). In addition to facilitating differentiation of harmless bacterial contaminants from bacterial pathogens, accurate identification of specific bacterial species aids in selection of antimicrobial drugs. It also facilitates differentiation of recurrent UTIs caused by relapses from recurrent UTIs caused by reinfections. Failure to perform bacterial urine cultures or failure to interpret results of urine cultures correctly may lead not only to diagnostic errors but to therapeutic failures as well.

Feline Idiopathic Cystitis: Current Understanding of Pathophysiology and Management  1043
Jodi L. Westropp and C. A. Tony Buffington

Many indoor-housed cats seem to survive perfectly well by accommodating to less than perfect surroundings. Neuroendocrine abnormalities in the cats we treat, however, do not seem to permit adaptive capacity of healthy cats, so these cats may be considered a separate population with greater needs. Moreover, veterinarians are concerned more with optimizing environments of indoor cats than with identifying minimal requirements for indoor survival.

Surgical Management of Urinary Incontinence  1057
Michael G. Hoelzler and David A. Lidbetter

Urethral sphincter mechanism incompetence and ureteral ectopia are the two most common causes of urinary incontinence in dogs and cats. Surgical treatments for both disorders have been described. Once a diagnosis is made, surgical intervention may lead to improved outcomes with resolution of incontinence in many patients. Proper case selection and surgical technique are critical in achieving clinical success when managing these difficult cases.

Index  1075