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Diagnostic relevance of qualitative proteinuria evaluated by use of sodium dodecyl sulfate-agarose gel electrophoresis and comparison with renal histologic findings in dogs.

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**OBJECTIVE:** To evaluate results of SDS-agarose gel electrophoresis (AGE) of urinary proteins for use in defining glomerular and tubulointerstitial derangements, investigate patterns of high-molecular-weight (HMW) proteins for differentiating among glomerular disorders, and assess low-molecular-weight (LMW) proteins as markers of severity of tubulointerstitial disease in dogs. **ANIMALS:** 49 dogs with increased serum creatinine concentrations or abnormal renal protein loss. **PROCEDURE:** Urinary proteins were examined by use of SDS-AGE and differentiated on the basis of molecular weight. The HMW proteins ( $>$  or  $=$  69 kd) were considered indicative of glomerular origin, whereas LMW proteins ( $<$  69 kd) were of tubular origin. Renal specimens were examined by use of light microscopy. Glomerular and tubulointerstitial lesions were differentiated by use of the classification for the World Health Organization and semiquantitative grading, respectively. **RESULTS:** Sensitivity of SDS-AGE was 100% for detection of glomerular lesions and 92.6% for tubulointerstitial lesions; specificity was 40% and 62.5%, respectively. Although HMW urinary proteins were not significantly associated with the type of glomerular lesion, LMW urinary proteins were significantly associated with the grade of tubulointerstitial damage. Detection of 12- or 15-kd proteins or both was highly indicative of a severe tubulointerstitial lesion. **CONCLUSIONS AND CLINICAL RELEVANCE:** SDS-AGE of urinary proteins in dogs represents a noninvasive test with high sensitivity for identifying glomerular and tubulointerstitial damage, but low specificity limits its validity as a stand-alone test to differentiate between glomerular and tubulointerstitial lesions. The test is particularly useful for identifying dogs with advanced tubulointerstitial disease but cannot be used to characterize glomerular disorders.