

How to.... Go with the flow on PROTEINURIA!

Positive dipstick protein can be a tricky subject. Dipsticks are notorious for having inaccurate results and falsely positive protein levels (as well as glucose, ketones and white blood cell detection). When do you run a urine protein:creatinine ratio (UP:C)? Or should you run a microalbuminuria? The ACVIM consensus statement on Proteinuria recommends investigating or treating based on the UP:C value, so it's important to know when its indicated. Microalbuminuria tests are extremely sensitive so I only run them in patients with negative or trace protein on dipstick who we are looking for a very early loss of protein (think: breed predispositions or early source of hypoalbuminemia).

When do you run a UP:C ? If the urine is <1.035 in a cat and <1.030 in a dog, a dipstick protein level of 1+ or greater is always something to pursue further. If the urine IS concentrated and there is greater than 'trace' protein on the dipstick, I look for active sediment (white blood cells, bacteria, gross blood in the urine) in the urine because then I would culture the urine to rule out infection! In fact, I usually recommend ruling out infection before submitting a UP:C regardless of whether there is active sediment. The proteinuria may resolve with treatment of a UTI. I also tend to put more weight into a 1+ dipstick protein when the patient is hypoalbuminemic, as hypoalbuminemia can be a marker of underlying serious illnesses and it is important to rule out renal involvement early (keep reading for a nice example which illustrates this principle!).

If the UP:C comes back persistently (meaning at least three samples separated by 2 weeks apart) elevated (>1.0 in a non-azotemic dog or cat, >0.5 in an azotemic dog and >0.4 in an azotemic cat) then the ACVIM consensus statement recommends further investigation.

Proteinuria can be pre-glomerular (quite rare: bence jones protein, hemoglobin or myoglobin) glomerular (renal losses, or non-renal losses) or post-glomerular (UTI, stones, stricture, urinary neoplasia). We have to rule out all of the pre-, post-, and non-renal losses first, to determine if an underlying cause needs to be eliminated. It's just not possible to cover all of these losses in the scope of a newsletter (I would put you to sleep in an instant) but we'd like to share a practical case of glomerular loss proteinuria (as everyone likes practicality!).

Glomerular proteinuria means that the kidney is not working and we should pursue a workup: blood pressure, CBC/Chem, urine culture, tick titers, abdominal ultrasound, and chest x-rays. Sometimes proteinuria, while insignificant, can be a sentinel for other diseases.

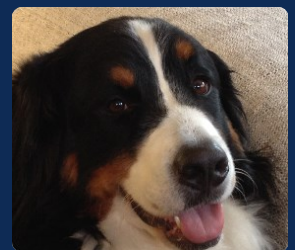


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Meet Juno, a 5 year old FS Bernese Mountain Dog with **no clinical signs**. Juno was presented to our clinic for proteinuria detected on wellness exam. She had 1+ dipstick protein with concentrated urine (USG >1.040) but a low blood albumin level of 2.5 mg/dl. Her UP:C was <0.1 (normal) so proteinuria was not significant – but hypoalbuminemia IS significant. A workup for hypoalbuminemia then ensued, which included an abdominal ultrasound and chest x-rays. Underlying histiocytic sarcoma was detected in the lung and liver, which ultimately was diagnosed via CT scan and fine needle aspirates.



So, in Juno's case, what turned out to be a very mild and at first seemingly insignificant finding on urinalysis ended up uncovering the hypoalbuminemia, which was the "canary in the coal mine" for a very serious disease which we luckily caught early.

Pssst! Did you know?

In 2000, the ACVIM started publishing consensus statements, which are basically a summary of expert internists' opinions on a certain topic (from antibiotic choice to tick borne diseases to hypertension). For starters, these statements outline what is considered the gold standard of care for diagnostics, treatment and prognosis.



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Urine Dipstick Protein Results – Quick Reference

