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FELINE CRI THE EARLIER THE BETTER

Foundations of early stages of chronic renal insufficiency in cats

VETERINARY CLINICAL NUTRITION

Diagnosis and staging of chronic renal insufficiency in cats

Chronic renal insufficiency (CRI) is a progressive disease, marked by an irreversible loss of kidney function, that in the later stages has a significant impact on a cat's quality of life. It is a common condition in senior cats, with over 30% of cats over 10 years of age being diagnosed[1,2,3].

Clinical signs of CRI are usually not spotted until the condition is in a more advanced phase, however, since symmetric dimethylarginine (SDMA) became available as a biomarker, regular screening of older cats has allowed to detect earlier cases, and classify them according to the **International Renal Interest Society (IRIS) staging system[4].**

To facilitate appropriate treatment and monitoring of patients, the **IRIS board developed guidelines that classified CRI into 4 stages,** depending on the severity of the azotaemia and the possible presence of proteinuria. According to this classification, early-stage CRI is defined within stages 1 and 2, which involves normal or mildly increased creatinine or SDMA levels and absent or mild renal azotaemia.

Accurate staging of CRI is key for clinicians to start early renoprotective interventions with particular focus on dietary management, which has been proven to help slow CRI progression and improve cat's quality of life and longevity[5,6,7,8].

Nutritional interventions during early stages of CRI

Dietary management with veterinary diets specially formulated for renal conditions is regarded as one of the cornerstones of management of feline CRI[4]. Yet, there are a limited number of studies looking at the nutritional management of cats at early stages of CRI, since it is only recently that clinicians have started to diagnose cats with early, non-azotaemic signs.

How much protein is the right amount in early stages of CRI?

The primary rationale for restricting dietary protein is to reduce glomerular proteinuria, nitrogenous wastes, and slow progression of CRI[6]. However, some studies have raised questions about the practice of restricting the quantity of protein in the diet of cats with CRI, due to the lack of association with disease progression[9,10]. As cats are strictly carnivorous, it is critical that they consume sufficient amounts of protein to maintain lean muscle mass and energy intake. Moreover, about 20% of senior cats tend to lose muscle mass as they age due to a decreased ability to digest protein, suggesting that they may have increased needs for dietary protein[11].

With this in mind, **in early stages of CRI, moderate levels of high-quality protein may help reduce nitrogenous wastes while avoiding loss of lean body mass, whereas in more advanced stages, higher restricted levels of protein may be needed,** while striving to maintain calorie intake and body weight[12].

The biological value of protein, including a complete amino acid profile and high protein digestibility, is a key factor to consider when recommending a renal diet.

Early dietary phosphate restriction is key to prolong survival

During the progression of CRI, if dietary phosphorus intake remains constant, then the **gradual decline in renal phosphorus excretion leads to hyperphosphatemia** which has been defined as a predictor for progression of feline CRI[13].

The parathyroid glands operate on a feedback system where high serum phosphorus stimulates increased PTH levels, leading to increased phosphorus and calcium resorption from bone and secondary renal hyperparathyroidism, which has been reported in 84% of cats with CRI[14].

Early renal diets with moderate restricted phosphorus can help balance the calcium-phosphorus homeostasis while helping slow the progression of CRI and prolong survival[14,15].

The importance of hydration in cats with CRI

Dehydration is a common complication of CRI, due to a higher level of diuresis, and can lead to inappetence, lethargy, weakness, constipation, and increased susceptibility to uremic crisis[16].

Moreover, chronic subclinical dehydration may result in compensatory effects that ultimately have a negative effect on the kidneys. These pathophysiologic effects can include release of vasopressin, poor perfusion and activation of the renin-angiotensin-aldosterone system (RAAS)[16].

Maintaining hydration is a crucial therapeutic goal in CRI, by carefully assessing renal patients for hydration status.

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