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COMPARISON OF PLASMA EXO-IOHEXOL, ENDO-IOHEXOL AND CREATININE CLEARANCES IN CATS WITH LOW, NORMAL AND HIGH GLOMERULAR FILTRATION RATES

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Determination of glomerular filtration rate (GFR) is the most reliable test to evaluate kidney function. Many plasma clearance markers can be used to estimate GFR, though recently iohexol and creatinine have been proposed as easily applicable clearance markers. A previous preliminary study suggested differences between clearance techniques to be related to the range of GFR estimate (van Hoek *et al.*, JFMS 2009;11:1028-1030). This study aimed to compare plasma creatinine, exo-iohexol and endo-iohexol clearance tests in a larger population of cats with low, normal and high GFRs.

Healthy cats and cats with hyperthyroidism (HT), diabetes mellitus (DM) and chronic kidney disease (CKD) that underwent a plasma exogenous creaitinine-iohexol clearance test (PEC-ICT) at the University of Ghent were considered for inclusion. The PEC-ICT was performed as described by van Hoek *et al.* (JVIM 2007;21:950-958). Cats were included only once if multiple PEC-ICTs were performed at different time points. The effect of health status on GFR was evaluated with a general linear model. A general linear model and Bland-Altman plots were used to compare GFR estimates according to the used clearance marker. All tests were performed with statistical software (Systat) and at the 5% significance level.

Forty-four cats were included and divided into 5 groups: 16 untreated HT cats, 6 DM cats, 10 CKD cats (6 were previously treated for HT, 1 cat had both CKD and DM), 6 young (7-12 months) healthy cats and 6 old (9-12 years) healthy cats. The mean GFR (expressed in mL/kg/min) was 2.33 ± 1.29 for exo-iohexol, 2.63 ± 1.39 for endo-iohexol and 2.65 ± 1.36 for creatinine clearance. The GFR estimates were significantly lower ($P<0.001$) in the CKD group and higher ($P<0.001$) in the HT group than in the other groups. A significant effect ($P<0.001$) of the clearance marker on the GFR estimate was observed in healthy (young and old) and CKD cats, but not in HT and DM cats. The number of cats showing a difference in GFR estimate of >0.5mL/min/kg or >25% was 17/44 and 14/44 between plasma creatinine and exo-iohexol clearance, 20/44 and 19/44 between plasma endo-iohexol and creatinine clearance and 25/44 and 19/44 between plasma endo- and exo-iohexol clearance, respectively. The Bland-Altman plots comparing endo-iohexol with the other 2 markers showed the largest discrepancies. Plasma creatinine clearance values were most often higher than those for exo-iohexol.

In conclusion, discrepancies between GFR testing methods may exist according to the clinical status of the animal. It is therefore recommended to use the same method during a patient's follow-up and separate cut-off values for each marker.