RELATION BETWEEN B12 DEFICIENCY IN CATS AND AGE, GASTROINTESTINAL INFLAMMATION AND PANCREAS DYSFUNCTION

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INTRODUCTION

Feline chronic pancreatitis occurrence increases with age (De Cock et al,2007). Blood vitamin B12 has been proposed as a marker of gastroenteric or pancreatic disease in cats (Simpson et al, 2001). The aim of this study was to determine whether a correlation between age and vitamin B12 deficiency in cats exists and if this could be explained by pancreatic dysfunction.

MATERIALS AND METHODS

Sixteen adult [<10y (3-9y), A] and forty-eight senior cats [≥10y (10-17y), S] without evident signs of gastrointestinal disease were included. Serum vitamin B12 (B12), feline trypsin-like immunoreactivity (fTLI) and feline pancreatic lipase immunoreactivity (fPLI) concentrations were analyzed after an overnight-fast. Abdominal ultrasonography (General Electric Logiq E) was performed within cats with low B12 concentration to evaluate signs of gastrointestinal inflammation. Data were statistically analyzed using the Student t-test and Pearson correlation. Significance was established at $P<0.05$.

RESULTS

Concentration of B12 was lower and fPLI was higher in S cats compared to A cats (figure 1). Among S cats, 15% (7/48) presented B12 deficiency (<300ng/L), 8% (4/48) a severe increase in fPLI consistent with pancreatitis (>5.4µg/mL), 2% (1/48) presented both alterations, and 12.5% (6/48) had a slight increase in fPLI (3.6-5.3µg/mL). By contrast, A cats did not have B12 deficiency and only 6% (1/16) had a slight increase in fPLI (figure 2, table 1). None of the cats presented fTLI consistent with EPI (<12µg/L). Considering all cats (n=64), B12 concentration negatively correlated with age and fPLI ($P<0.05$) (figure 3). All cats with B12 deficiency showed gastrointestinal inflammation (as seen by ultrasonography) suggestive of gastritis or IBD (figure 4).

Fig. 1. Plasma levels of fPLI and B12 in Adult and Senior cats. *p<0.05 **p<0.01

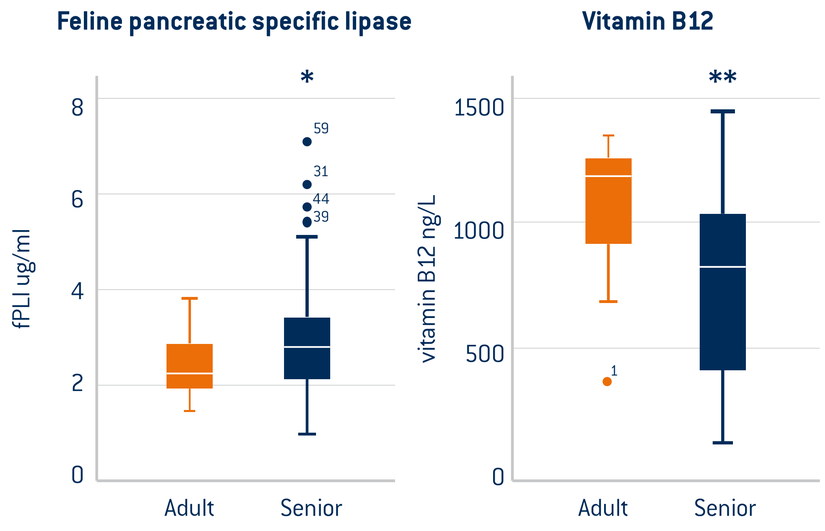

Fig. 2. Individual values of B12 and fPLI in the cat population. ▼ Adult (<10y) ● Senior (>=10y)

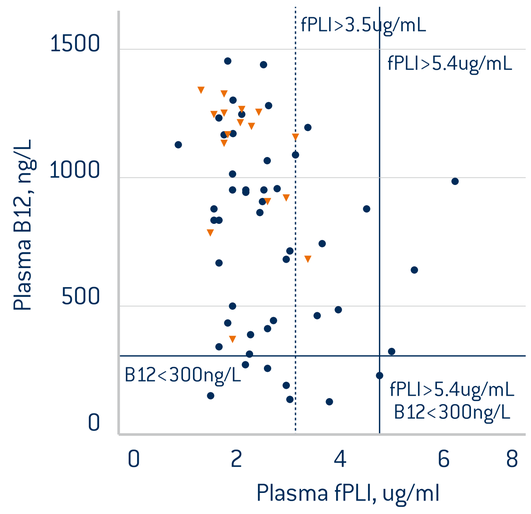

Table 1. Frecuency table of plasma fPLI and B12 results out of range in adult and senior cats

	units	Adult (n=16)	Senior (n=48)
Age (mean±sem)	yr	5.6 ± 0.45	11.5 ± 0,28
B12 deficiency (<300ng/L)	%	0%	15% (7/48)
fPLI slight increase (>3.5ug/ml)	%	6% (1/16)	15% (7/48)
FPLI severely increased (<5.4ug/mL)	%	0%	8% (4/48)
B12 deficiency, fPLI severely increased	%	0%	2% (1/48)

Fig. 3. Correlations of vitamin B12 with age and fPLI. (r=Pearson correlation)

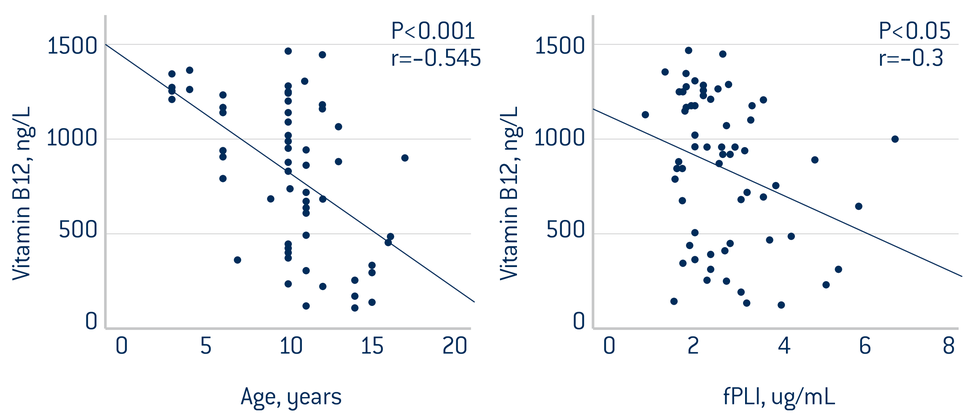

Fig. 4. Example of two ultrasonographic abdominal images of gastric (1) or intestinal (2) inflammation from cats with B12 deficiency.

(1) (2)

DISCUSSION AND CONCLUSION

Senior cats had lower B12 concentrations compared to adult, being frequently more related to subclinical gastrointestinal inflammation rather than to subclinical pancreas dysfunction (as suggested by serum fPLI and fTLI concentrations). Serum B12 concentration, as a marker of subclinical gastrointestinal inflammation, could be an interesting analyte for use in routine evaluation of senior cats.