Expression of ghrelin and somatostatin system components in pancreatic neuroendocrine tumors and their relationship with clinical-histological characteristics

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Introduction

Pancreatic neuroendocrine tumors (PNETs) are uncommon neoplasms from the endocrine pancreas, whose incidence is lately rising. Unfortunately, an advanced stage is commonly found at the moment of diagnosis and, therefore, new tumoral markers are required. Ghrelin and somatostatin/cortistatin families are two regulatory systems whose alterations can be associated to development/progression of various cancers.

Objective

We aim to evaluate the expression levels of ghrelin and somatostatin/cortistatin systems components in PNETs and to explore their putative relationship with histological/clinical patient features.

Patients and methods

An observational retrospective study with 28 PNET patients was performed by collecting clinical/histological characteristics. Formalin-fixed paraffin-embedded samples were used to determine the mRNA expression of ghrelin and somatostatin systems components by quantitative PCR, using the adjacent non-tumoral tissue as control.

Results

Table 1: Patients characteristics

n (patients)	28
n (PNETs samples)	25
Sex	57,1% F; 42,9%M
Mean age	55±14 years
Incidental diagnosis	21.1%
Functioning tumors	42.1%
Peri-pancreatic tissue invasion	55,6%
Metastasic disease at diagnosis	40.7%
Vascular invasion	28,6%
Perineural invasion	18,5%
Relapsed disease	33,3%

Figure 1: Tumor Grades (n=25)

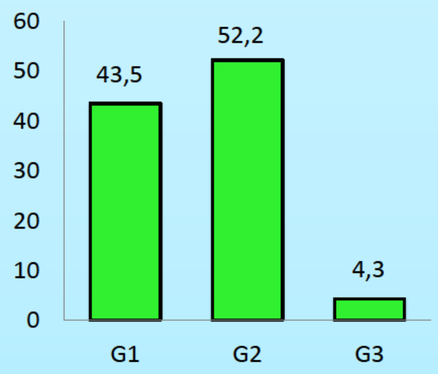
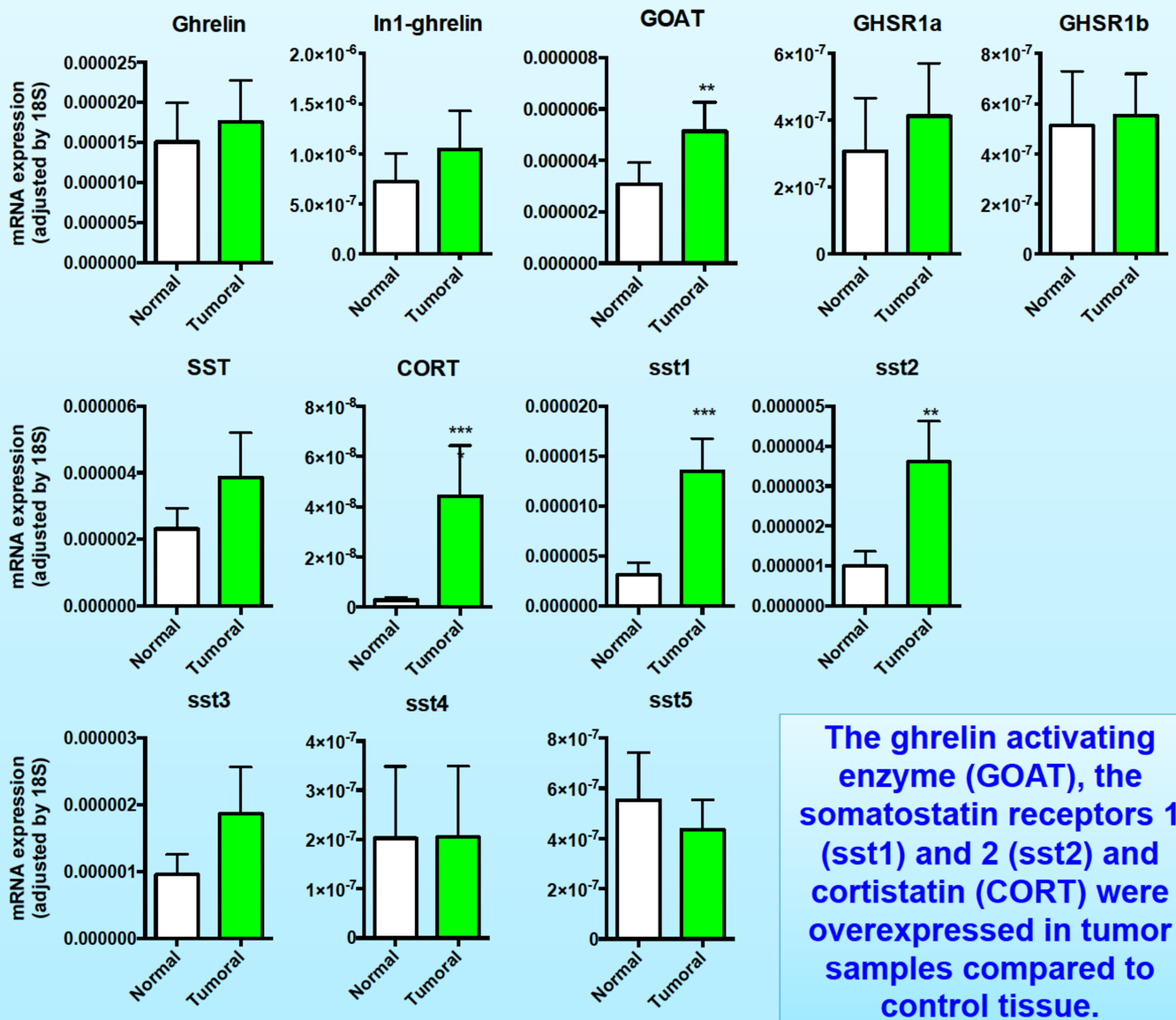


Figure 2: Expression of ghrelin and somatostatin systems components in PNETs and in control adjacent non-tumoral tissues.



The ghrelin activating enzyme (GOAT), the somatostatin receptors 1 (sst1) and 2 (sst2) and cortistatin (CORT) were overexpressed in tumor samples compared to control tissue.

Table 2: Relationship between clinical-histological parameters

Clinical-histological parameters		
Tumor diameter	Vascular invasion	p<0.05
	Necrosis	p<0.05
Mortality	Metastasis	p<0.05
	Relapsed disease	p<0.05

Table 3: Clinical-molecular relationships

Clinical-molecular parameters		
sst1	Vascular invasion	p<0.05
GHSR1a	nerve invasion	p<0.01
sst3	Skin lesions	p<0.05
SST	Mortality	p=0.083
sst3	Mortality	p=0.08

Conclusions

Our results indicate that the majority of ghrelin and somatostatin systems components are expressed in PNETs, where some of these components display specific associations with clinical-histological parameters, which may help to better understand PNETs pathophysiology and to identify novel molecular targets with potential prognostic and/or therapeutic value for PNETs patients.

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