DIAGNOSTIC POTENTIAL OF MIRNAS IN PARATHYROID CARCINOMAS

A. Ladang, Y. Seynaeve, E Cavalier
Department of Clinical Chemistry, ULiège and CHU of Liège, Belgium

Introduction:

Parathyroid carcinoma is a rare endocrine cancer with a poor prognosis. Additionally, diagnostic tools that discriminate parathyroid carcinomas from adenomas are insufficient although essential in the therapeutic scheme. Previous reports have identified, in parathyroid biopsies, several potential biomarkers that are differentially expressed in parathyroid carcinomas compared to adenomas. In this study, we investigate the expression profile of those previously reported miRNAs in sera of patients suffering from parathyroid carcinoma.

Material and Methods:

Our cohort is composed of sera from 10 parathyroid carcinomas, 12 parathyroid adenomas and 11 healthy subjects. 9 miRNAs were selected based on literature namely: miR-222-3p, miR-30b-5p, miR-139-5p, miR-517c-3p, miR-126-5p, miR-26b-5p, miR296-5p, miR-503-5p and miR-30e-5p. miRNA were extracted using miRNeasy Serum/Plasma Advanced Kit and cDNA synthetized with miRCURY LNA RT Kit. miRNA expression profile was quantified by real-time qPCR assays Lightcycler (Roche°) using miRCURY LNA SYBR Green PCR Kit.

	Parathyroid carcinomas	Parathyroid adenomas	Healthy subjects
n	3♀ - 7♂	5♀ - 7♂	5♀ - 6♂
Age (years)	49,3 ± 13,5	61,4 ± 11,3	58 ± 19,7
Calcium (mmol/L)	3,58 ± 0,5	2,91 ± 0,4	2,4 ± 0,1
Phosphates (mmol/L)	0,654 ± 0,2	0,76 ± 0,2	0,99 ± 0,2
PTH (ng/L)	1211 ± 1563,9	86,7 ± 75,6	17,8 ± 5,7
25-OH-VTD (ng/mL)	12,2 ± 6,7	32,6 ± 7,3	29,2 ± 7,2
Creatinine (mg/mL)	14,6 ± 3,7	10,96 ± 3,7	10,8 ± 3,1
GFR	44,6 ± 15,6	56,7 ± 6,9	54,4 ± 7,2

Fig 1. **Demographic characteristics of the studied population.**

Results:

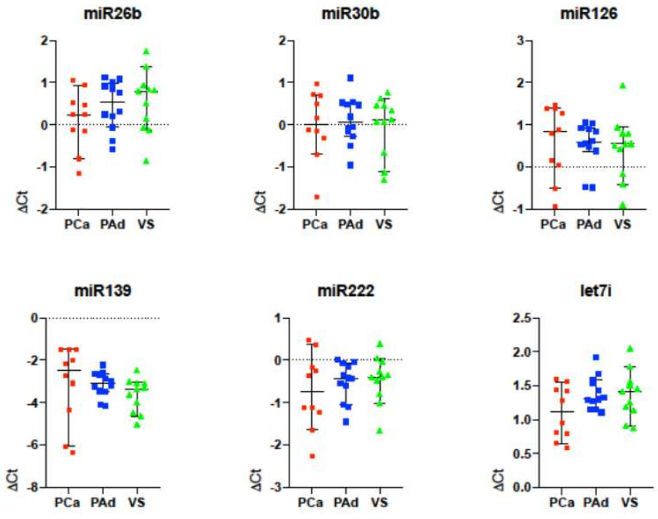

Fig 2. **miRNA expression profile:** No significant differences were found for miR-222-3p, miR-30b-5p, miR-139-5p, miR-126-5p and miR-26b-5p. miR-517c-3p, miR296-5p, miR-503-5p were not expressed in all samples. Relative expression of miRNA are expressed in Ct values normalized to miR-484 CT values (PCa: Parathyroid carcinomas; PAd: Parathyroid adenomas; VS: healthy subjects).

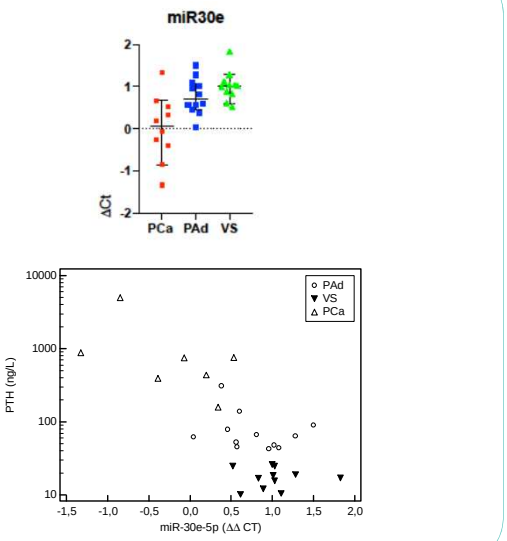

Fig 3. **miR-30e-5p expression:** (Upper graph): miR-30e-5p was significantly differentially expressed in parathyroid carcinomas compared to the other subpopulations. (Lower graph): A significant logarithmic correlation was observed between miR-30e-5p and PTH values. Relative expression of miRNA are expressed in Ct values normalized to miR-484 CT values (PCa: Parathyroid carcinomas; PAd: Parathyroid adenomas; VS: healthy subjects).

Conclusions:

This study identifies miR-30e-5p as potential serum biomarker for parathyroid carcinomas. It also shows that previously reported miRNA identified in parathyroid carcinoma biopsies are not inapplicable in serum matrix. Given the frequency of the disease, we believe that those results are interesting but should be confirmed by other studies.