Serum level of miRNA-143 as a potential prognostic marker in patients with colon cancer and synchronous metastatic disease

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OBJECTIVES

Colorectal cancer (CRC) is one of the main causes of cancer mortality. In the recent years, levels in the expression of a number of small non-coding endogenous RNAs, microRNAs were found to be related to the manifestation of a cancer phenotype and good candidates for CRC biomarkers.
The aim of the present study was to determine the role of miRNA-143 as potential prognostic and predictive biomarker in patients with synchronous colorectal metastatic disease.

METHODS

Sera samples from 82 patients with synchronous colorectal metastatic disease before starting 5-FU based chemotherapy were collected. Small RNAs (<200 nucleotides long) were isolated from serum samples of 55 healthy volunteers and 82 CRC patients by commercial kit. cDNA synthesis was performed with 90ng RNA and 50nM stem-loop primer that anneal to mature miR-143. U6 was used as endogenous constitutively expressed control. Expression analyses were carried out by diluted cDNA and combination with miR-143 Forward primer and Universal Reverse primer that anneal to the stem-loop primer of miR-143. Relative gene expression was calculated using $2^{-\Delta\Delta Ct}$ method.

RESULTS

Table 1. Patient clinical characteristics

Characteristic	N patients (%)
Median age, year	**61 ± 11.14**
≤ 55	24 (29.27%)
> 55	58 (70.73%)
Gender	
Female	28/82 (34.15%)
Male	54/82 (65.85%)
***RAS* status**	
Mutant	39/76 (51.32%)
Wild	37/76 (48.68%)
Tumor localization	
Right	22 (26.83%)
Left	60 (73.17%)
Metastasis in liver	68/81 (83.95%)
Metastasis in lung	21/81 (25.93%)
Metastasis in peritoneum	13/81 (16.05%)

Lower expression level of miR143 in sera of CRC patients in comparison with healthy volunteers.

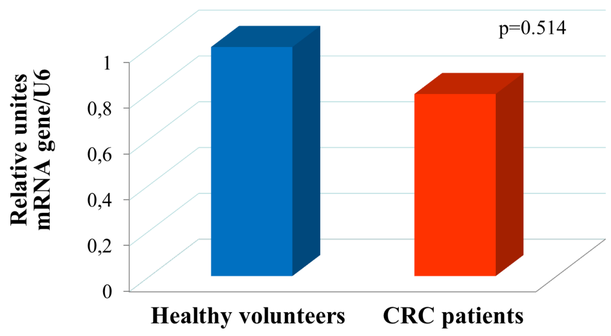

Fig 1. Relative expression of miR-143 in sera.

miRNA expression was measured using reverse transcription-quantitative polymerase chain reaction in sera from CRC patients (n=82) and healthy volunteers (n=55). U6 RNA was used as an internal control.

The progression free survival for the CRC patients with low expression of miRNA-143 was 8.6 months (95%, CI: 7.1-10.2) vs 6.3 months (95%, CI: 4.9-7.6) of the CRC patients with high expression of miRNA-143.

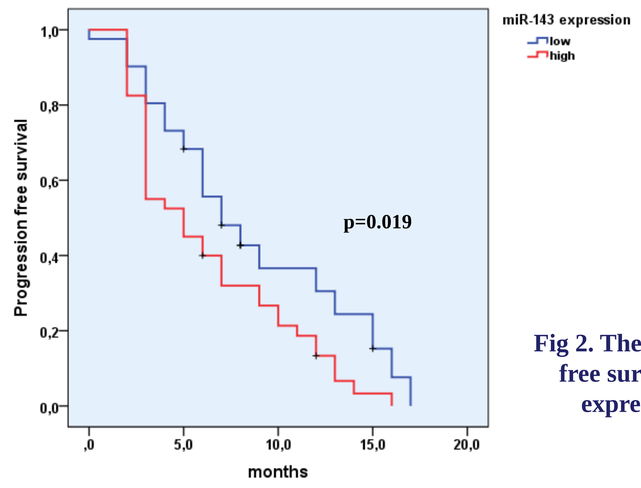

Fig 2. The Kaplan–Meier estimates of progression free survival analysis on the basis of miR-143 expression in sera from 82 CRC patients.

The overall survival for the CRC patients with low expression of miRNA-143 was 26.6 months (95%, CI: 20.9-32.2) vs 18.3 months (95%, CI:, 14.1-22.5) of the CRC patients with high expression of miRNA-143.

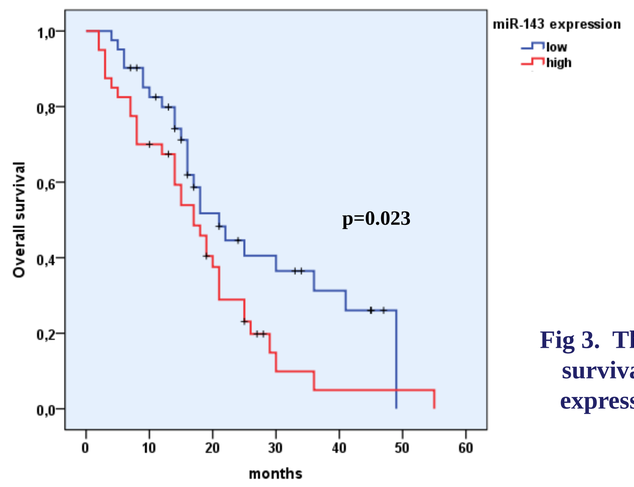

Fig 3. The Kaplan–Meier estimate of overall survival analysis on the basis of miR-143 expression in sera from 82 CRC patients.

Cox regression analysis showed that low expression of miRNA-143 was associated with a longer overall survival, HR 0.58 (95%, CI: 0.34-0.98, p=0.047).

CONCLUSIONS

Our data suggest that low serum levels of miR-143 are potentially useful as a predictive and prognostic marker in patients with colon cancer and synchronous metastatic disease.

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