BMC Proceedings

POSTER PRESENTATION Open Access

MicroRNAs from peripheral blood mononuclear cells as biomarkers for detection of preclinical fibrosarcoma

Adriane F Evangelista[1], Danilo J Xavier[2], Elza T Sakamoto-Hojo[2], Eduardo A Donadi[2], Geraldo A Passos[2], Marcia MCM Silveira[1*]

From São Paulo Advanced School of Comparative Oncology
Águas de São Pedro, Brazil. 30 September - 6 October 2012

Background

Blood immune cells cooperate to prevent the progression of tumors through cancer immunosurveillance. Since activated peripheral immune cell clones trigger a sensitive transcriptional response upon recognition of tumors, which can be identified by transcriptional profiling, we hypothesised that peripheral blood mononuclear cells (PBMCs) could be used as reporters for cancer detection.

Materials and methods

We used a model system in which groups of immunocompetent BALB-c mice were subcutaneously injected with different numbers of tumorigenic B61 fibrosarcoma cells. The groups of study were: (i) tumoral group with serial injections of 10^2 to 10^6 cells; (ii) negative control group represented by sterile nonpyrogenic saline, (iii) inflammation group by Zymozan (Sigma) and (iv) bacterial infection group by injection of 10^7colony forming units [cfu] pool from mice feces. Mouse peripheral blood was collected three days after injection; blood samples (N=10) were pooled according to experimental conditions. Mononuclear cells were separated by centrifugation on a Ficoll-Hypaque cushion (GE Healthcare) and RNA was extracted using Trizol Reagent (Invitrogen). Samples were hybridizated on miRNA microarrays (Agilent).

Results

We identified four microRNAs, miR-451, miR-144, miR-486 and miR-494, which were differentially expressed when compared to control groups, including inflammation and bacterial infection.

Conclusions

Our results showed that PBMC microRNA expression profiling can serve as a sensitive method for detection of preclinical cancer.

Financial support

FAPESP.

Author details

[1]Molecular Oncology Research Center, Barretos Cancer Hospital, CEP:14784-400, Barretos, SP, Brazil. [2]Molecular Immunogenetics Group, Department of Genetics, Faculty of Medicine, USP, Ribeirão Preto, SP, Brazil.

Published: 4 April 2013

doi:10.1186/1753-6561-7-S2-P2
Cite this article as: Evangelista *et al.*: MicroRNAs from peripheral blood mononuclear cells as biomarkers for detection of preclinical fibrosarcoma. *BMC Proceedings* 2013 **7**(Suppl 2):P2.

* Correspondence: mmcmsilveira@gmail.com
[1]Molecular Oncology Research Center, Barretos Cancer Hospital, CEP:14784-400, Barretos, SP, Brazil
Full list of author information is available at the end of the article