

CD163 detection in breast cancer patients' peripheral blood. A possible marker?

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Introduction: M2 Macrophages are a subtype of macrophages that suppress inflammation, angiogenesis, tissue remodeling and repair. Tumor associated macrophages (TAMs) resemble M2 macrophages phenotypically, enabling tumor cells to intravasate into peripheral blood. The purpose of this study was to evaluate the expression of CD163 in breast cancer patients using healthy donors as control.

Methods:

Subjects: Peripheral blood was collected from 22 patients with breast cancer (BC) as well as from healthy donors. All patients were histopathologically diagnosed with BC. Healthy donors did not have cancer, or any other conditions

Flow Cytometry: CD14-FITC and CD163-PE were used to stained the blood samples. Acquisition was performed on a Beckman Coulter FC 500. Data were analysed using FCSExpress V6.

Immunocytochemistry: Blood samples were also stained for CD14-FITC and CD163-PE and viewed under a fluorescence microscope to determine the presence of TAMs in blood circulation

Statistical Analysis: Patients were divided into groups according to stage and compared for CD14/CD163 expression. P values lower than 0.05 were considered statistically significant

Results: CD14+/CD163+ were detected in all samples that were analysed, with values ranging from 0.11 to 1.53%. Healthy donors did not seem to have a statistically significant difference with patients from stages I (p=0.46)-II (p=0.53). However patients' groups from stages III-IV seemed to have a significant difference from the rest of the groups (p values= 0.01, 0.03). CD14+CD163+ TAMs were detected under the fluorescence microscope as well.

I	II	III	IV	Healthy Donors
0.11	0.15	0.83	0.46	0.17
0.24	0.35	1.36	0.43	0.3
0.13	0.21	1.52	0.27	0.23
0.2	0.36	0.29	0.57	0.11
0.14				0.23

Table 1: Percantile values of CD14/CD163 cells in patients from all cancer stages. Table also shows values from healthy donors

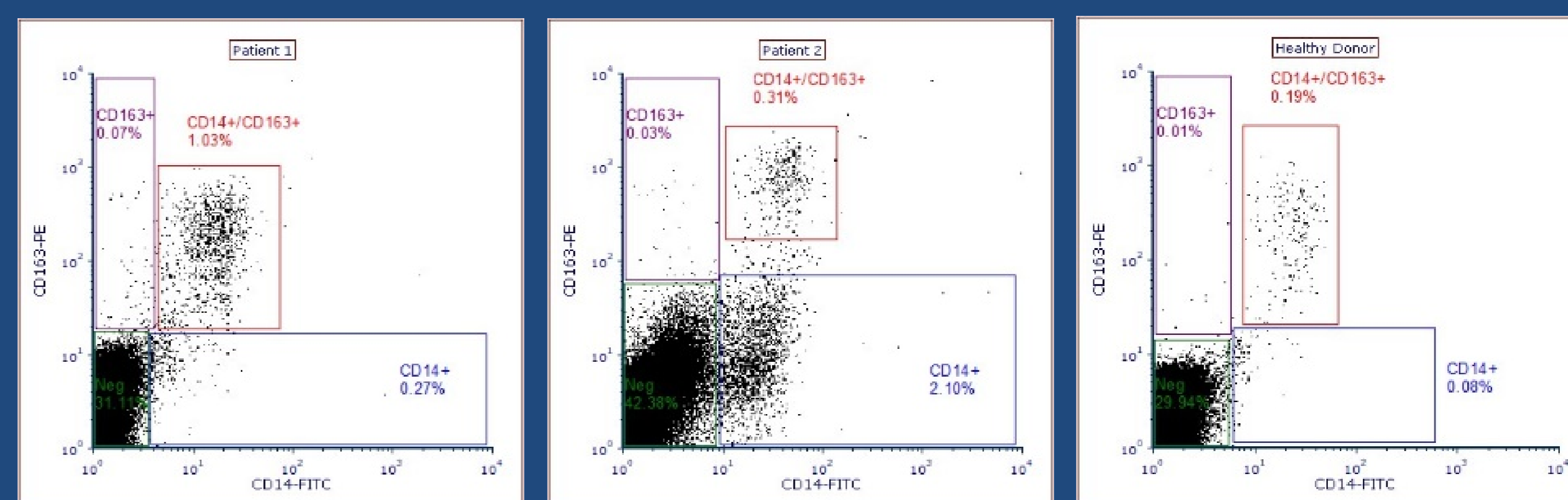


Figure 2: Flow cytometric detection of TAMs. CD14+/CD163+ cells were detected in all samples but at different levels.

Discussion: According to the data from this study, we detected a significant difference in TAM marker expression in patients with advanced breast cancer. These results suggest that M2-like TAMs may play a role in cancer progression and metastatic potential of cancer cells. Also, they may serve as a diagnostic marker in breast cancer, however the inclusion of more samples is required to determine the specificity and sensitivity of this method.

	I	II	III	IV	Healthy
I					0.462
II	0,1113				0,5386
III	0,01996	0,1124			0,03655
IV	0,01996	0,1124	0,1939		0,03655
Healthy	0,462	0,5386	0,03655	0,03655	

Table 2: P values between the different groups of the study (C.I. 95%). Stage III and IV patients show statistically significant difference from healthy donors and stage I and II patients.

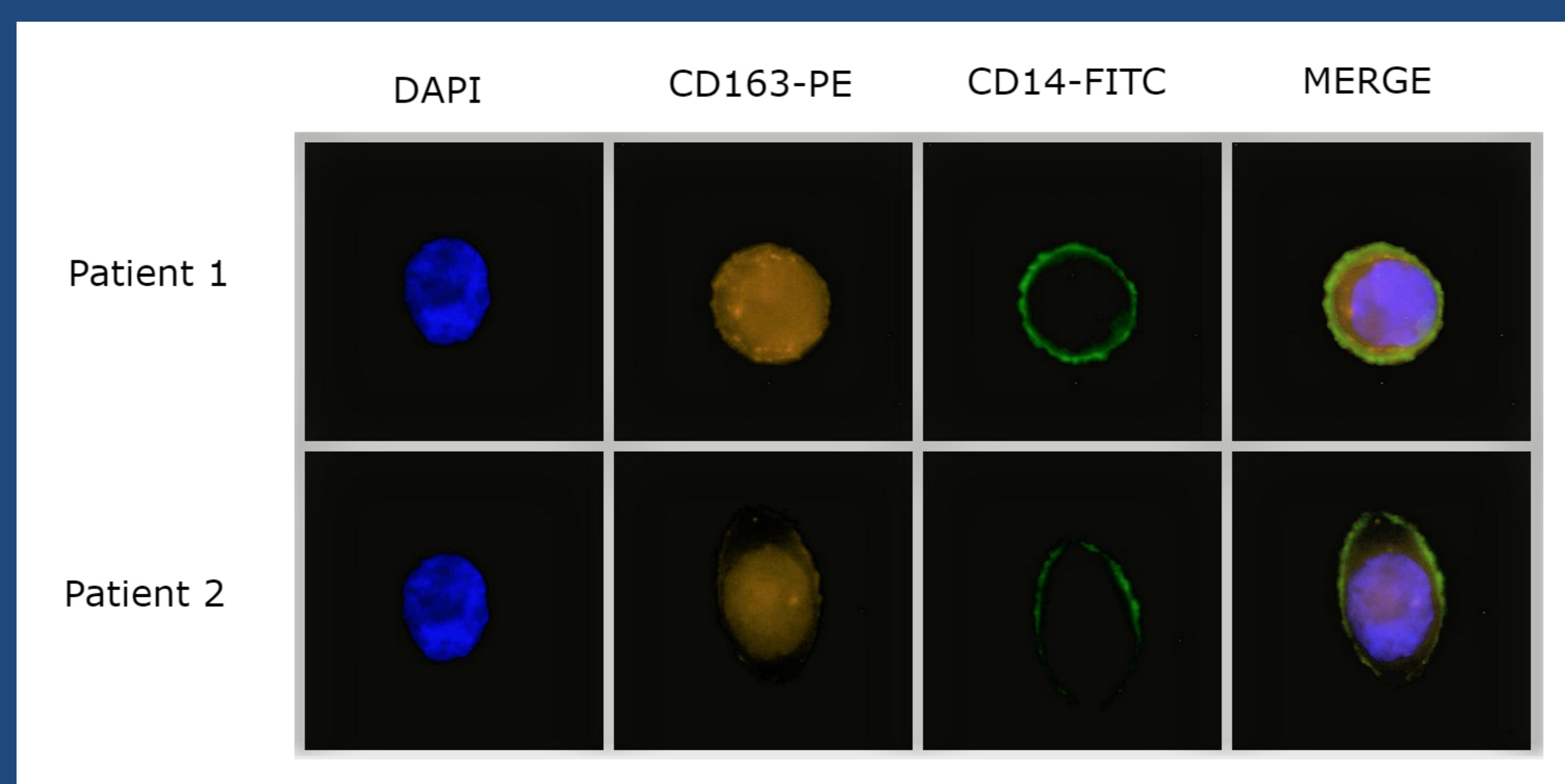


Figure 1: Immunocytochemical detection of CD14/CD163 cells in two of the patients' samples that were analyzed. Merged images show expression of both markers

Selected references

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