

# ID: #89 CCL2 EXPRESSION AND THE NEUTROPHIL PLASMA MEMBRANE CHARACTERISTICS IN BLOOD IN DIFFERENT STAGES OF ENDOMETRIAL CANCER

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## Introduction

The mechanisms of neutrophils (Nph) recruitment to a tumor and their pro-tumor polarization are poorly understood. The CCL family chemokines enhance the tumor recruitment, and the plasma membrane topography affects Nph activity.

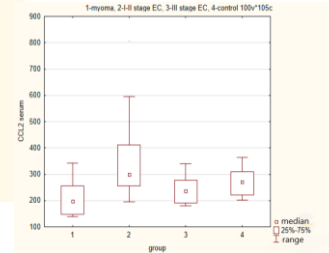
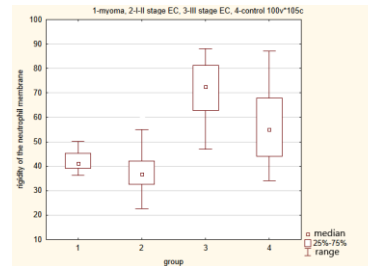
We aimed to evaluate the CCL2 expression, the stiffness and surface markers expression of Nph plasma membrane in blood in endometrial cancer (EC).

## Material and methods

Blood samples were obtained from the primary endometrioid EC patients, stage I-III FIGO (n=58), uterine myoma patients (n=20) and healthy women (n=30). The CCL2 level was determined by ELISA (JSC Vektor-Best-Volga, Russia). Circulating Nph plasma membrane stiffness was measured by atomic force microscopy (NT-MDT, Russia). The CD16, CD95 Nph surface expression was assessed by fluorescence microscopy. Statistical analysis was performed using Statistica 13.

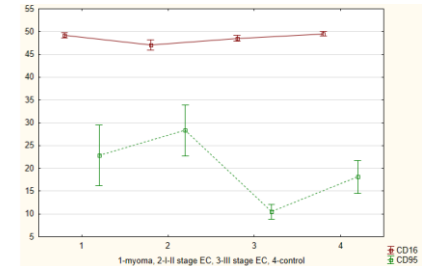
## Results

We observed that serum CCL2 level was decreased in myoma (197.6 (Q1-Q3 147.1-255.1) pg/ml) ( $p=0.013$ ) and increased in stage I EC (299.6 (255.8-411.8) pg/ml) ( $p=0.012$ ) compared with the control (270.1 (220.1-310.8) pg/ml). In stage II-III, serum CCL2 level was lower (236.9 (190.2-276.3) pg/ml) than that in stage I ( $p=0.007$ ).



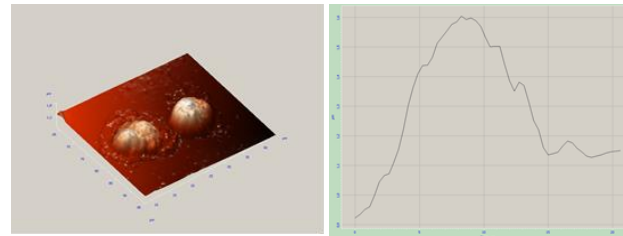
The Nph membrane stiffness in stage I was reduced compared with the control ( $37.3 \pm 2.2$  MPa vs  $56.7 \pm 2.4$  MPa) ( $p=0.051$ ). In stage II-III, the membrane stiffness ( $70.5 \pm 8.4$  MPa) was higher than in myoma ( $p=0.021$ ) and the control ( $p=0.046$ ). There was a linear regression relationship between serum CCL2 level and Nph membrane stiffness value in stage I ( $p=0.023$ ), but not in stage II-III.

The expression of CD95, a marker involved in immune evasion, was lower in stage II-III compared with myoma ( $p=0.003$ ) and the control ( $p=0.006$ ). In EC, membrane stiffness negatively correlated with CD95 expression ( $r=-0.478$ ,  $p=0.0005$ ). The number of active mature (CD16+) Nph was lower in stage I compared with myoma ( $p=0.029$ ) and correlated with serum CCL2 level ( $r=-0.423$ ,  $p=0.0024$ ).



## Conclusion

The serum CCL2 expression, the structure and marker status of circulating Nph membrane in stage I endometrioid EC differ from those in stage II-III, probably reflecting differences in the Nph recruitment and polarization processes.



Neutrophils of patients with stage II EC fixed with methanol and a lateral section of its profile