Influence of C5a Receptor on Ovarian Cancer Progression

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Introduction

- Ovarian cancer is the 5th leading cause of cancer death in women. It is particularly deadly because of the lack of symptoms in early stages. 70% of women are diagnosed in the late stages.

- C5a is very potent inflammatory chemoattractant that binds C5aR. Overproduction of C5aR in cancer is correlated with high tumor aggression and poor patient outcome in cancers such as breast and endothelial.

- Several studies have reported that C5a-C5aR axis promotes tumor growth and metastasis.

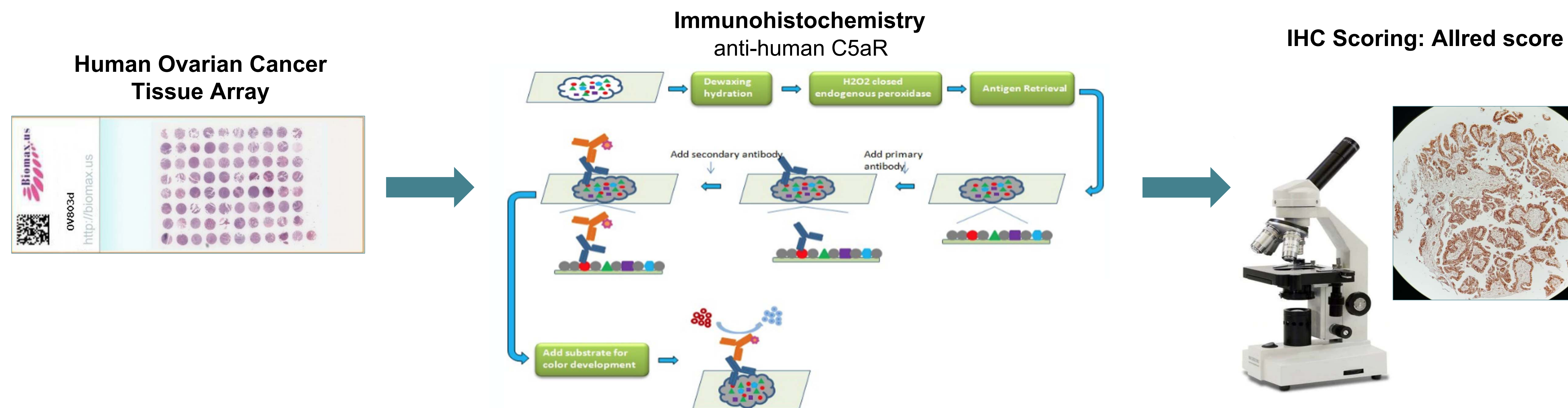- The influence of the C5a-C5aR axis on ovarian cancer progression has not yet been elucidated.

Hypothesis

We hypothesize that C5aR protein expression level will increase with ovarian tumor grade.
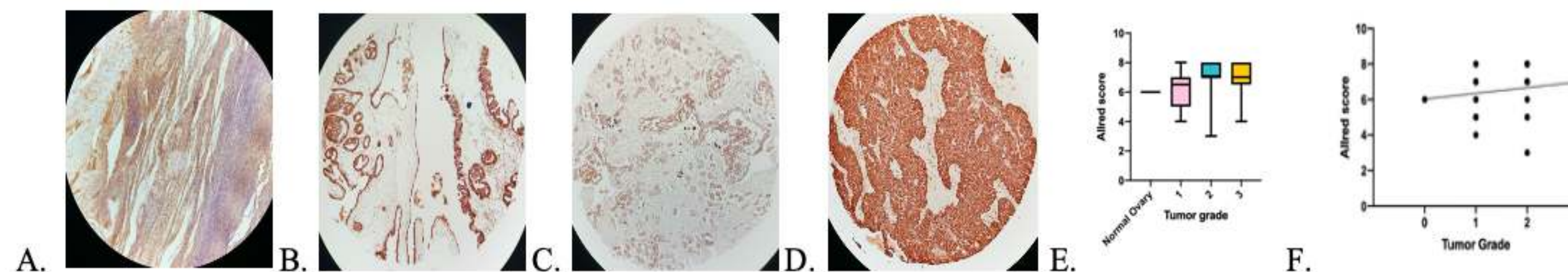
References

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Experimental Design

Human Ovarian Cancer Tissue Array

Immunohistochemistry
anti-human C5aR

IHC Scoring: Allred score

Results

Figure 1. Immunohistochemical analysis of C5aR expression in ovarian serous papillary adenocarcinoma, A. 40x image, normal ovary with primary antibody, B. 10x image, tumor grade 1, Allred score 7, C. 10x image, tumor grade 2, Allred score 3, D. 10x image, tumor grade 3, Allred score 8, E. Results summarized in a bar graph, F. linear regression test (p=0.0871), n=64. p value= 0.2131 (ANOVA), Tukey Kramer test between control and tumor grade revealed: 1. p=0.9987, 2. p=0.8677, 3. p value= 0.8890
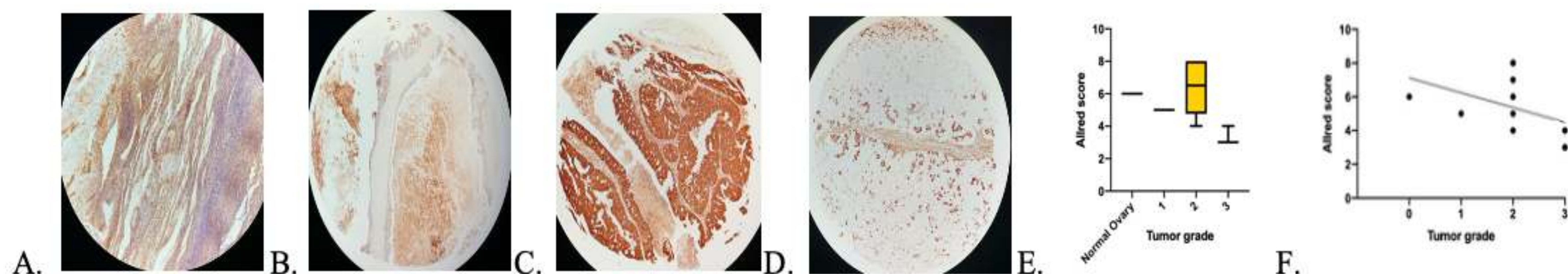
Figure 2. Immunohistochemical analysis of C5aR expression in ovarian mucinous adenocarcinoma, A. 40x image, normal ovary with primary antibody, B. 10x image, tumor grade 1, Allred score 5, C. 10x image, tumor grade 2, Allred score 8, D. 10x image, tumor grade 3, Allred score 4, E. Results summarized in a bar graph, F. linear regression test (p=0.1825), n=10, p value= 0.0990 (ANOVA), Tukey Kramer test between control and each tumor grade revealed the following: 1: p=0.9565, 2: p= 0.9960, 3: p= 0.4206
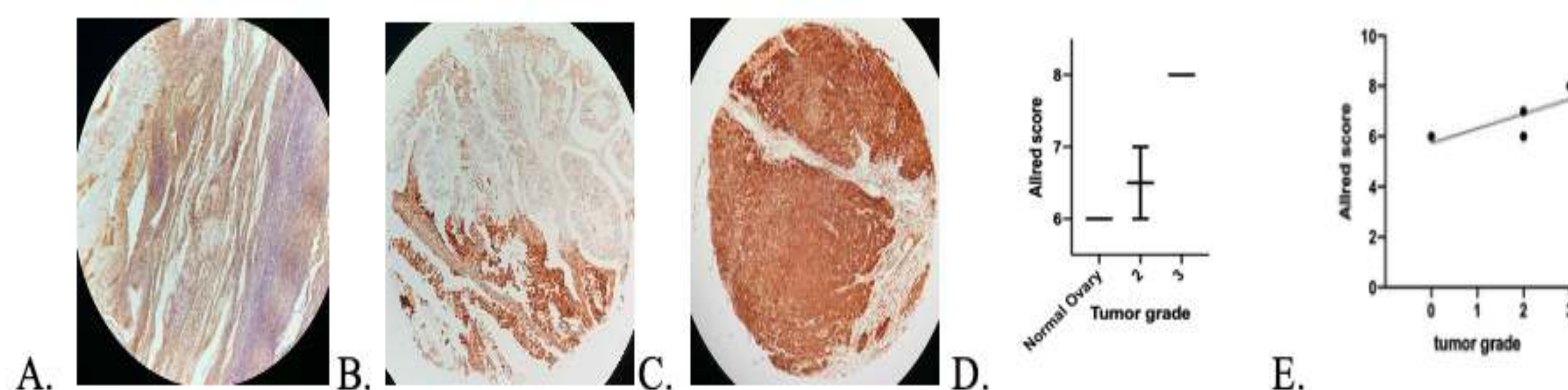
Figure 3. Immunohistochemical analysis of C5aR expression in endometroid adenocarcinoma, A. 40x image, normal ovary with primary antibody, B. 10x image, tumor grade 2, Allred score 7, C. 10x image, tumor grade 3, Allred score 8, D. Results summarized in a bar graph, E. linear regression test (p=0.2391), n=3, p value= 0.4264 (ANOVA), Tukey Kramer test between the control and each tumor grade revealed the following: 2: p= 0.8553, 3: p= 0.4307

Conclusions

- The IHC staining was successful, which is apparent because of the differential staining throughout the cores

- The Allred scoring system was not ideal because of the broad ranges

- There is no correlation between C5aR expression and ovarian cancer progression.

Future Directions

- The stain could be redone with cores only from one hospital, so that the grades would be standardized

- The cores could be re-scored using a different scoring system

Acknowledgements