Evaluating the Phenotype of Macrophages in the Pathology of Endometriosis

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Endometriosis is a common but hard to diagnose gynecologic disorder, occurring when the endometrial lining travels outside the uterus in 10-12% of menstruating women . The etiology of endometriosis can be improved by evaluating the macrophage phenotype at the tissue level. Macrophages, part of the innate immune response, have a phenotypic spectrum from pro-inflammatory(M1) to pro-remodeling/pro-rebuilding(M2). Few studies have examined the pathology of endometrial lesion tissues, focusing primarily on peritoneal aspirates from affected patients found to have more M1 phenotype. I hypothesize that the predominance of M2 phenotype within endometrial lesions helps the tissue to survive outside the uterus. Tissue samples were obtained from six women undergoing laparoscopic surgery for pelvic pain at Magee Women's Hospital, University of Pittsburgh Medical Center. Control samples were taken 2cm away from lesions. Immuno-labeling was done with specific cell surface markers to detect macrophages: HLA-DR for M1 and CD206 for M2. Tissue samples were imaged and cells were quantified using ImageJ. Overall, M2 phenotype was predominant within endometrial lesions and within control tissues harvested from endometriosis patients, but lesion and control samples were very similar in macrophage content. To obtain more accurate and efficient data, a cell counter program coded in Python is in development.