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Relationships among Pro-Inflammatory and Degradation-Related Biomarkers released by Articular Cartilage from Osteoarthritic Knees

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INTRODUCTION: Osteoarthritis (OA) is a multifactorial disease progressing to whole-joint inflammation and degeneration causing pain and dysfunction. Previous studies found weak to moderate correlations between inflammatory biomarkers and degradation related biomarkers. This study was designed to find non-linear relationships between inflammatory biomarker and degradation related biomarkers to better understand how OA development and progression.

METHODS: With IRB approval (#1208392), cartilage was collected from TKA (n=8). 6mm diameter cartilage explants were created and cultured in supplemented DMEM with a 3-day media sample analyzed for biomarkers. The data was placed into evenly distributed quartiles. A Kruskal Wallace with post-hoc analysis and Bonferroni correction were used to determine significant differences between groups ($p<0.05$).

RESULTS: This analysis of the data found numerous biomarker production relationships not found using standard linear correlation analysis, and provided insight into the dynamics of biomarker production for biomarkers with a weak moderate linear correlation.

CONCLUSION: The results of this study uncover relationships between inflammatory and degradation related biomarkers. Ongoing studies are aimed at further characterization of these interactions during development and progression of OA towards better defining disease mechanism and targets for effective interventions.