[AB1005] GLYCOSAMINOGLYCAN IN SYNOVIAL FLUID OF OSTEOARTHRITIS PATIENTS VALIDATES KELLGREN-LAWRENCE SCORE AS A USEFUL INDICATOR FOR DISEASE PROGRESSION AND CARTILAGE DEGRADATION

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Background: Cartilage is a marvel design, which handles a remarkable pressure in weight bearing joints yet facilitates resilient movement. Osteoarthritis (OA) is a disease characterised by progressive degeneration of cartilage, which is a dual result of inflammation and associated molecular damage.
In recent years, use of several biochemical-markers has been emphasized, which provide pathology specific information. Being a degeneration product of cartilage matrix, glycosaminoglycan (GAG) has a merit as direct measure of cartilage degenerative changes. However, invasive nature and associated cross-talk explaining multidimensional role of these markers always limit its prognostic value for disease diagnosis. On the other side, most of the Orthopaedic Clinicians use Kellgren-Lawrence Score (KL) as a metric for OA diagnosis and progression, giving weightage to Joint Space Narrowing (JSN) and Osteophyte formation.
Objectives: Linkage between KL-score and GAG levels is hypothesized. KL-score is based on visual approximate estimation of joint space narrowing, while GAG is a direct biochemical value.
Methods: We analysed twenty-four synovial fluid (SF) samples obtained from OA patients for their GAG values using DMMB based assay [1]. The patients were graded among KL-score 1-4, based upon their radiographic features by a practicing qualified Orthopaedic surgeon. The results were evaluated by "*paired t*" test for statistical significance.
Results: All the patients revealed high GAG value compared to normal, obtained from our non-OA patient data-base (78.4±30.1µg/ml) with matching ethnicity. Interestingly, an established correlation was found between KL-score and GAG levels. On one end, when compared between KL-scores, significant cartilage loss was observed in between Grade 1 & 2, Grade 1 & 4 and Grade 2 & 4, degradation of cartilage between Grade 2 & 3, Grade 3 &4 remains non-significant. KL-score 2 & 3 shares similar radiographic characters, more prominent in grade 3, thus indicating more disease severity.
Conclusions: KL-score system is often criticized for its non-clarity of inter-grading during disease-progression and overemphasis on osteophyte formation, which is less involved in OA pathogenesis per se. Moreover, visual estimation of JSN is also the source of criticism [2]. Despite of its limitations, GAG levels in SFs validated KL-score system as a useful indicator for cartilage degeneration and OA progression in studied patients.

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