

**Title: Losartan Slows Progressive Decline in Cartilage Volume Among Patients With Knee Osteoarthritis: Patellar Cartilage Volume Analysis Using Data From Osteoarthritis Initiative (OAI)**

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**Purpose:** In previous osteoarthritis (OA) studies performed on murine models displaying the heterozygous chondroplasia gene (cho/+) with a coll1a1 mutation shown, Losartan showed reduced cartilage loss in the knee joint articular cartilage and the temporomandibular joint (TMJ) condylar (Osteoarthritis and Cartilage, 2019, 27; 676-686). This cross-sectional study examines the beneficial effect of losartan on patellar cartilage volume in patients with knee osteoarthritis.

**Methods:** We used data from the (OAI) to compare patellar cartilage volume in patients who were taking losartan. A total of 4796 men and women ages 45-79 years were enrolled into the OAI study who had knee osteoarthritis or who were at high risk of developing it. We focused on the progression sub-cohort, consisting of 1390 subjects who had documented osteoarthritis at three different periods: baseline, 12 and 24 months. Patients with missing data or those who were taking other angiotensin receptor blockers were excluded from our study. Patients were divided into the losartan group and the control group. Data sets for the analysis consisted of demographics, drug usage, along with magnetic resonance imaging (MRI) and patellar cartilage volume at each of the three time periods.

**Results:** Our analysis of the progression sub-cohort included a total of 85 (44 %) men and 108 (56 %) women with symptomatic knee OA (Total n=193). The average age of patients was 59.6 years (SD, 8.7 years; range, 45–79 years). The majority of the participants were Caucasian (n=142; 73.6 %) and African American (n=42; 21.8 %). Of the 193 patients included in analysis, 30 patients were taking losartan and remaining 163 patients were considered control group. Over the period of two years, there was a progressive decline in cartilage volume in both groups. Our analysis show that there was no significant loss of cartilage volume with patients on losartan over baseline at 12 (5 %) and 24 months (8 %) post enrollment. Patients without losartan showed significantly higher cartilage loss at 24 months post enrollment over baseline (~15 %,  $p \leq 0.05$ ).

**Conclusion:** This study found evidence that the use of losartan reduced the loss of patellar cartilage in patients with knee osteoarthritis.