

“Together,
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- Category : Shoulder
- Detail Category : Rotator cuff

Effect of Ciprofloxacin on Rotator Cuff Enthesis

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Introduction and Background

Fluoroquinolones are known to adversely affect the enthesis. The aim of this study is to evaluate the response of each layer of rotator cuff enthesis to fluoroquinolone exposure. We hypothesized that exogenous factors such as fluoroquinolones produce **distinct, layer-specific effects** within the enthesis.

Material and Method

A total of 90 shoulders from 45 female Wistar albino rats (0.3–0.4 kg) were analyzed. Ciprofloxacin was administered daily (2.5 mL/kg intraperitoneally), and rats were sacrificed at 1, 4, 8, and 12 weeks, with a control group included. Following euthanasia with 5% isoflurane, both rotator cuffs with the proximal humerus were harvested en bloc. Specimens underwent standard processing (formalin fixation, decalcification, paraffin embedding) and staining with H&E and safranin O–fast green. Five sections per sample were evaluated. Histomorphometric measurements included cell counts in tendon, muscle, bone, and fibrocartilage layers, areas of calcified and uncalcified fibrocartilage, and muscle fiber and collagen bundle diameters.

Results

Significant group differences in cellularity were identified in muscle, tendon, calcified fibrocartilage, and bone (all $p < 0.001$). Muscle cellularity was reduced in all ciprofloxacin-exposed groups compared with controls. Tendon cellularity declined progressively and reached its lowest level at 2 months, with a modest increase at 3 months. Bone showed a moderate but persistent decrease beginning at 1 month. Calcified fibrocartilage also demonstrated a reduction in cellularity; although the overall decline was more gradual than in other layers, notable decreases were observed at 1 and 2 months followed by partial recovery at 3 months. Non-calcified fibrocartilage exhibited no significant changes across exposure durations. Trend analyses confirmed significant monotonic decreases over time in muscle, tendon, calcified fibrocartilage, and bone, but not in non-calcified fibrocartilage. (Figures 1 and 2)

Conclusions

Fluoroquinolone exposure produced distinct, layer-specific alterations within the rotator cuff enthesis, confirming that enthesal layers respond differently to exogenous factors.

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Figure & Table 1.

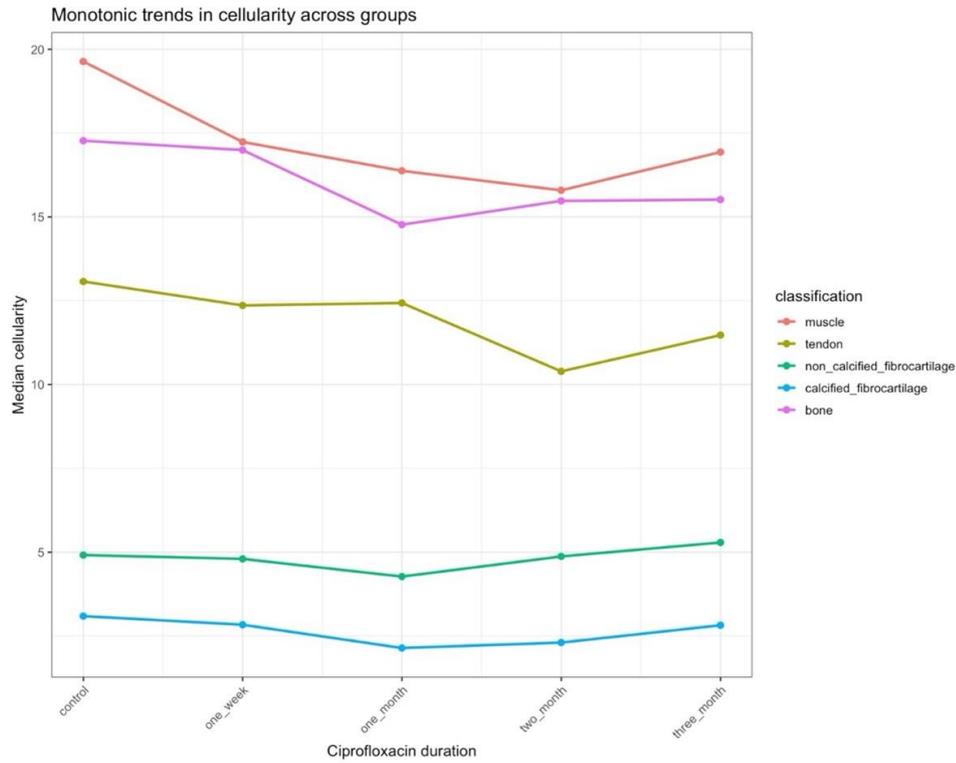


Figure & Table 2.

