



University of zabol

Graduate school
Faculty of Veterinary Medicine
Department of Clinical Science

**The Thesis Submitted for the Degree of Doctor of DVM
(in the field of veterinary medicine)**

Title:

**Comparison of the histopathological and clinical effects of the
injection of two drugs, Ketorolac and Meloxicam in tendon repair.**

Supervisor:

Dr. M. R. Aghchelou

Advisors:

Dr. A. Jamshidian

Dr. D. Saadati

By:

Reza Danaei

september 2020

Abstract

Achilles tendon rupture is one of the most common traumas in humans and animals and leads to significant costs. Because the musculoskeletal system is constantly active and under mechanical stress, it is more likely to be injured. There are several ways to treat and accelerate the healing of tendon injuries. The purpose of this study was to compare the histopathological and clinical effects of ketorolac and meloxicam as two nonsteroidal anti-inflammatory drugs on tendon repair. For this purpose, 30 Wistar rats were randomly divided into 4 groups, including negative (n=5) and positive (n=5) controls, ketorolac (n=10) and meloxicam (n=10) treatment groups. All groups were injected with 0.02 cc of collagenase A in the right leg's Achilles tendon, except the negative control group that received 0.02 cc of Ringer's serum. After the injection of collagenase A, two treatment groups were injected from the day of collagenase injection daily for 5 days. The groups were clinically evaluated on days 0, 1, 3, 5, 7, 10 and 14 and the parameters of weight, lameness, appearance and behavior, tendon swelling, pain on palpation and appearance of trauma site were examined and recorded. On the last day of the experiment, all the rats were euthanized in accordance with animal rights standards and their tendon specimens were placed in 10% formalin for stabilization. Histopathological sections were then prepared from them and with light microscopy with magnification of 10 and 40 to score the parameters of structure and arrangement of collagen fibers, density of fibrocytes and fibroblasts, appearance of schematic of fibrocytes and fibroblasts, penetration of AI cells. Vascularity, nucleus shape, collagen discoloration and hyaline depletion were investigated. Comparison of clinical parameters between two groups of meloxicam and ketorolac showed that both drugs were effective in reducing some of the clinical parameters, but were not statistically significant. There is no statistically significant difference between the two treatment groups in histopathological parameters, but meloxicam group was significantly different from the positive control group in several cases. Descriptive histopathological examination revealed that the effect of meloxicam on tendon healing was more pronounced than ketorolac. It can be acknowledged that Meloxicam is effective in reducing both clinical signs and improves tissue repair, but ketorolac reduces clinical signs more, and is less effective in tissue repair than meloxicam.

Keywords: Ketorolac, Meloxicam, Tendon repair, Rat