

Evaluation of biological agent association anti-TNF induced arthritis and laser therapy: an experimental study

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Rheumatoid arthritis is a chronic, systemic inflammatory illness that predominantly affects the joints. Recent works tested inductor agents of arthritis models and their effects when associated to low intensity laser therapy [2, 3]. In this work the effects of the biological agent Infliximab and low intensity laser therapy were investigated in an animal experimental model of Zymosan induced arthritis. This model is widely used in pharmacological studies because it enhances the hypernociception of inflammation, detected throughout the observation of joint articular incapacitation, increase of vascular permeability, release of inflammatory mediators in the joint space and histological changes [1].

A laser instrument (GaAlAs) DMC brand, model Photon Laser III was used, and the radiation was applied at wavelength 808 nm, power density of 200 mW/cm², energy density of 2000 mJ/cm², dose of energy or fluence 2 J/cm², spot area of 0.02 mm, length of 5 dots per second. Rats with 250g were separated in 5 groups; the control (GI) received intra-articular 50µl of 0.9% saline solution in the right knee. The experimental group GII received intra articular injections of Zymosan (AZy) in the right knee at day zero (1mg, in 50µl of saline solution 0.9%); group GIII received daily doses of the same solution in the medial face of the right knee and 10 applications of laser (904 nm); Group GIV received 3 doses of 1,6ml of endovenous Infliximab in the vein of tail; Group GV received 3 doses of infliximab and daily doses of laser (904 nm). In the 14th day of the experiment the group GII was not treated. The organisms were sacrificed 24 hours after each protocol was completed and submitted to histopathological analysis using standard histological procedures.

Results showed that, with 14 days of AZy, the groups presented a moderate to intense inflammation, presence of giant cell granulomas and synovial hyperplasia. When treatment was associated with laser therapy the inflammation was substantially reduced. The results suggest the efficiency of laser therapy associated or not with the biological agent application, to the treatment of induced chronic synovitis.

References

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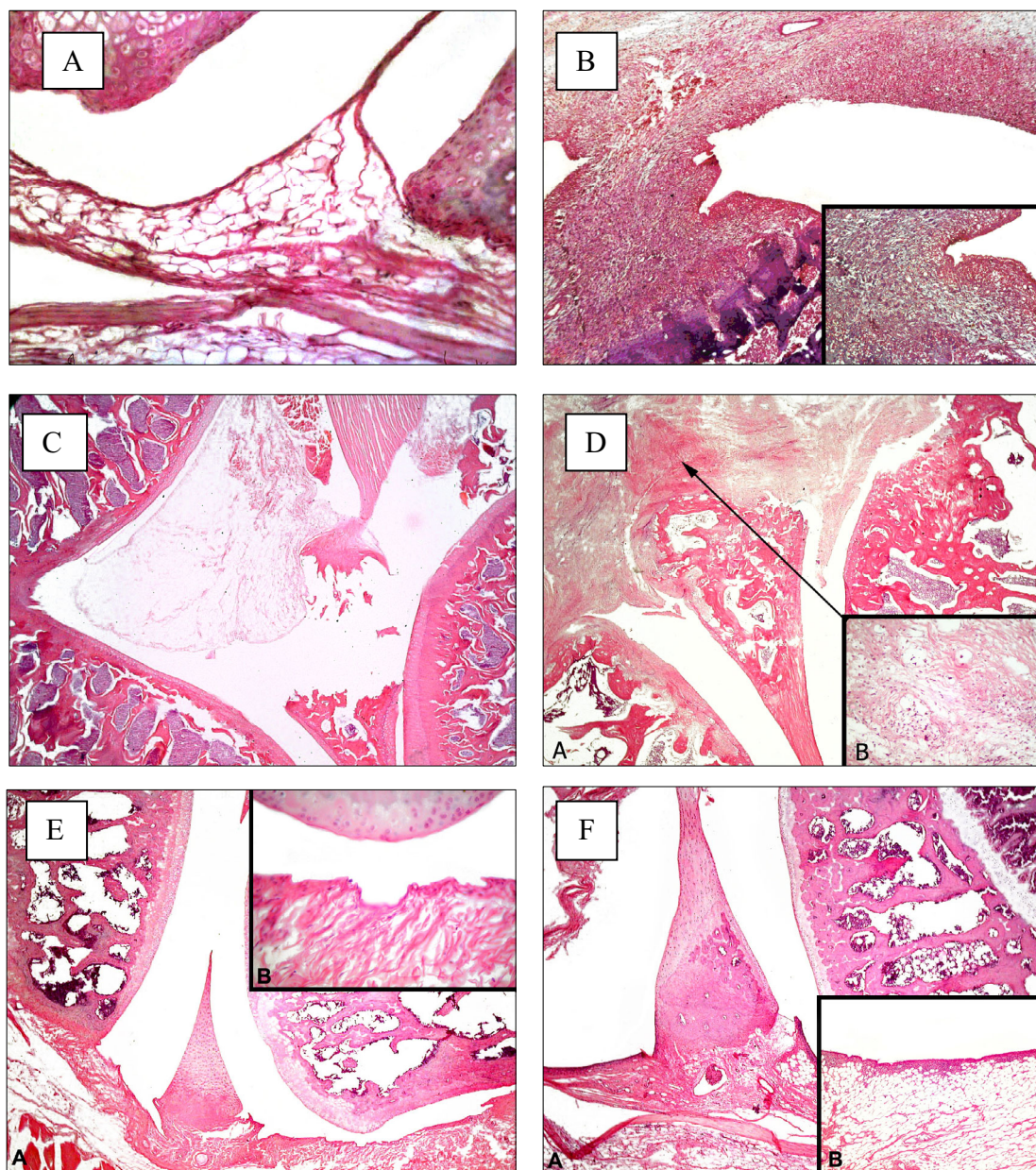


Figure 1. A – (Group GI) synovium without inflammatory process (H&E Original 20 x). B- (Group GII) arthritis induced by zimosan, (AZy) with linfoplasmocitary inflammatory infiltrate, villous hyperplasia, focal aggregates and intense inflammation (grade 3). Predominance of giant cells, with granulomatous area (Original 20 x H&E); C – (Group GIII) AZy treated with laser, synovial tissue with normal patterns, absence of inflammation and no stromal hyperplasia or villi; D- (Group GIV) AZy treated with Infliximab, with no inflammatory cells in sinovia. H&E (Original 40 x); E and F- (Group GV) group treated with infliximab and laser, showing chronic nonspecific inflammation,. H&E (Original 4 x).