



BIOCHEMICAL PARAMETERS IN GONARTHROSIS ASSESSMENT FOLLOWING INTRA-ARTICULAR TREATMENT OF HYALURONIC ACID (Poster N. 15)

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PURPOSE

Intra-articular injections of hyaluronic acid (HA) agents modulate knee articular viscosity and are used to reduce the friction between articular surfaces and to ameliorate joint pain. The objective of the study was to examine whether biochemical parameters such as cytokine profiling associated with patient-reported measures of knee function can be critical for a comprehensive and better assessment of injury conditions in gonarthrosis (GA, into a knee containing articular fluid or a "dry" knee).

Primary outcome : Modulation of cytokine biomarker expression pattern.

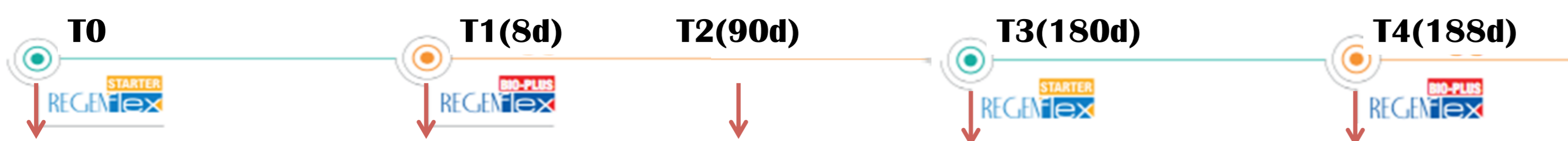
Secondary outcomes : Pain reduction during 50 ft (15 m) walk test, Amelioration of clinic conditions and Quality of life, Reduction of paracetamol dosage.



METHODS

Eligible gonarthrosis (GA) patients from both "dry" knee and articular fluid knee groups (14 and 15, respectively) were treated with HA [(RegenFlex Starter - 32mg/2ml highly-purified HA, with molecular weight between 800-1.200 kDa (T0=0d) and RegenFlex Bioplus - 75mg/3ml mg 1 M, 2 M and 500 thousand Da, after 8 days (T1=8d)]. Study design consisted of 40 weeks of follow up (T2=90d), HA was administered intra-articularly after 180 and 188 days (T3=180d and T4=188d, respectively). Clinical assessment of knee function: visual assessment scale (VAS 0-10) for pain intensity, Range of Motion (ROM) and HHS questionnaire. Blood and synovial fluid were collected. Cytokines were determined through the 27-plex panel of Pro™ Human Cytokine 27-plex Assay (Bio-Rad Labs).

Fig. 1. Experimental design.



Samplings: Plasma/Synovial liquids
Clinical DATA : clinical assesment - Quality of life VAS pain scale WOMAC knee function ROM

Inclusion criteria:

baseline knee pain score <150 mm; 50-80 years; corticosteroids prior to study; index knee Kellgren-Lawrence Grade II or III.

Exclusion criteria:

joint infection; inflammatory joint disease, osteonecrosis; recent intra-articular HA injections and knee trauma or surgery; full-thickness cartilage loss.

RESULTS

Fig. 2. Plasma level of cytokines (T=0) vs RegenFlex Starter HA injection (T=1 8d)

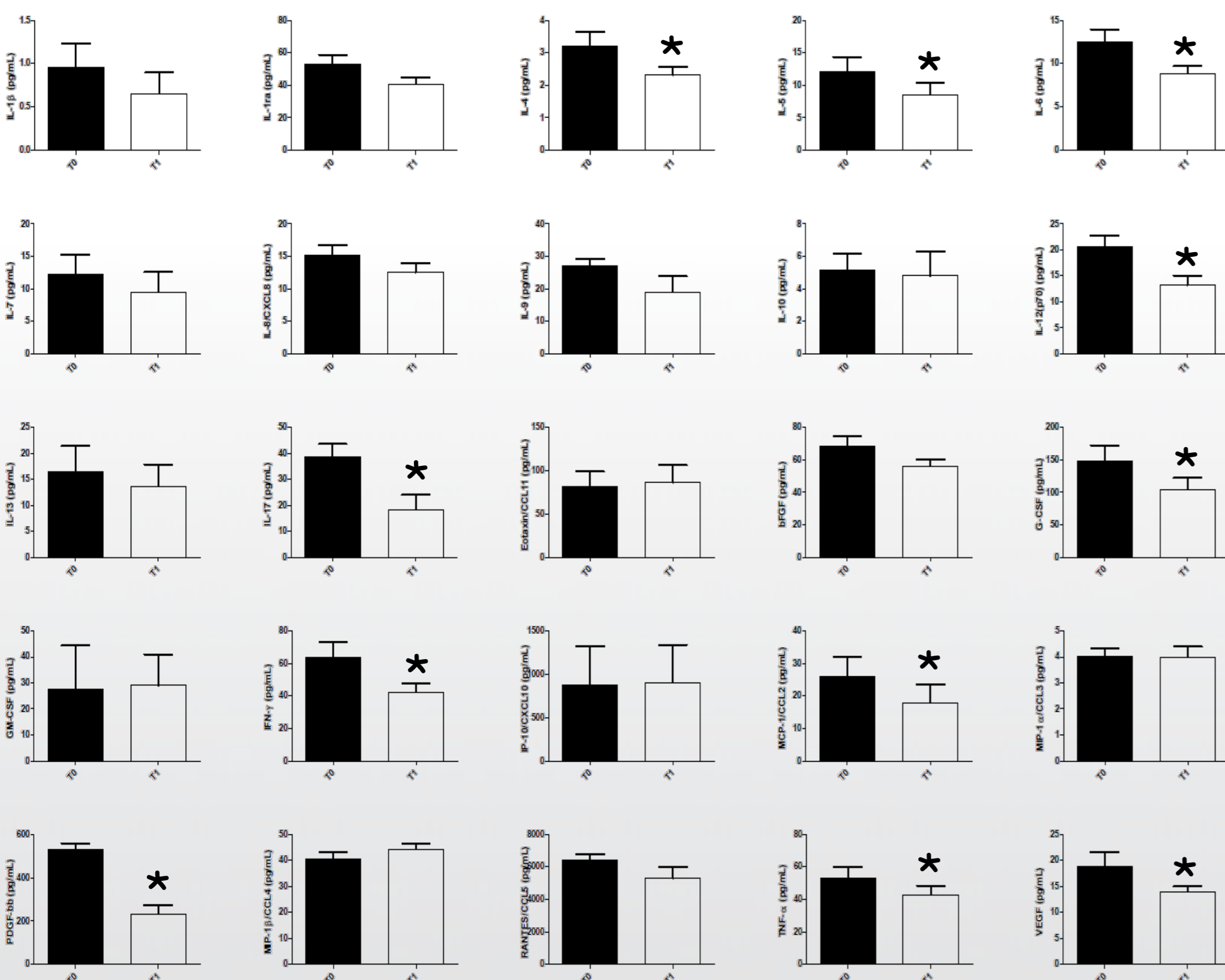
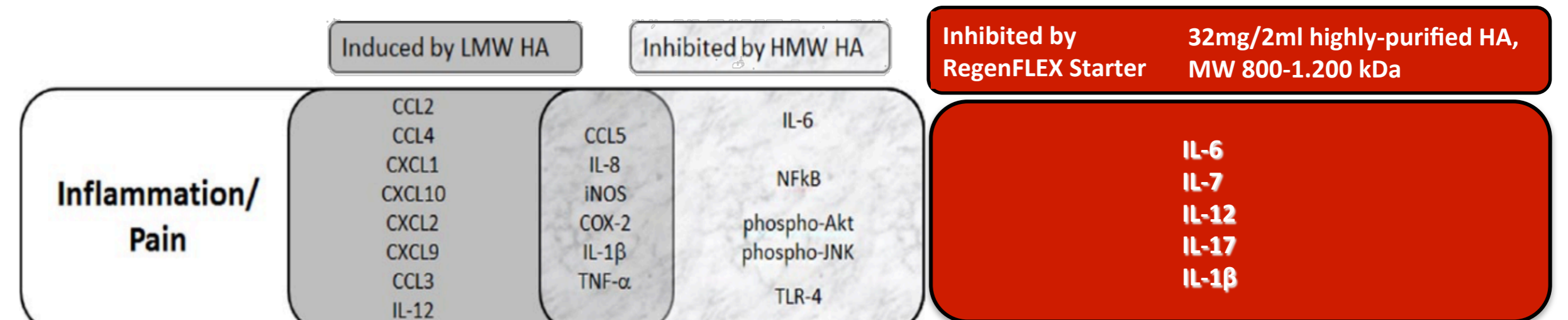


Fig. 3. Selected target involved in inflammation/pain responses in gonarthrosis



The comparison between plasma cytokine levels at baseline (T=0) vs Regenflex Starter HA injection (T=1 8d) showed that several inflammatory cytokines and growth factors, such as IL-1beta, IL-6, IL-8, MCP-1, and PDGFbb, significantly decreased in all GA patients, as some of the selected target involved in inflammation/pain responses in gonarthrosis suggested by Nicholls et al 2017 depending on HA molecular weight.

GA patients received RegenFlex Starter injections improved VAS scores and knee injury symptoms. Worse scale quality of life was observed in patients with "dry" knee, due to higher joint stiffness

CONCLUSIONS

Clinical data indicate that viscosupplementation with highly-purified HA with between 800-1.200 kDa promotes pain reduction and knee function improvement within articular fluid and "dry" knee joints. Of particular interest is the drastic down regulation of several plasma inflammatory cytokines induced by Regenflex Starter HA, data might be particularly useful for clinical assessment.

References

Nicholls et al Clinical Medicine Insights: Arthritis and Musculoskeletal Disorders 2017

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