

Analysis of the Popliteal Lymph Node as a Biomarker to Monitor Arthritic Flare in Male versus Female Tumor Necrosis Factor-Transgenic Mice with Inflammatory Arthritis

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Background: Rheumatoid arthritis (RA) is a chronic autoimmune disease characterized by inflammation in peripheral synovial joint tissue and is suggested to be more severe in women. The popliteal lymph node (PLN) has been found to be a biomarker of arthritic flare in the human TNF- transgenic (TNF-Tg) mouse model of inflammatory arthritis. The PLN as a biomarker has not been assessed in male versus female TNF-Tg mice. The goal was to verify that anti-TNF therapy is equally effective in reducing the severity of arthritis in male and female TNF-Tg mice using PLN volume as a marker of arthritic flare.

Methods: Male and female TNF-Tg mice aged 3 months were subdivided into two groups and treated with either placebo or anti-TNF therapy for six weeks. Biweekly, power-Doppler (PD) ultrasound imaging was taken of right and left PLNs in each subgroup. 3D reconstructions were created using Amira image analysis software to determine total volume, PD volume