

## **Prevalence of subclinical enthesopathy in asymptomatic first degree relatives of patients with spondyloarthritis.**

### **Background:**

Ultrasonography (US) is considered a reliable tool to detect subclinical entheses. There are no studies evaluating entheses involvement detected by US in relatives of spondyloarthritis (SpA) patients. **Objectives:** 1) To evaluate and compare the prevalence of subclinical enthesopathy detected by US in first degree relatives of patients with spondyloarthritis and healthy controls (HC), 2) To evaluate associations between US findings, clinical variables and presence of HLA-B27.

**Methods:** We designed a multicenter cross-sectional study including asymptomatic first-degree relatives of patients with Ankylosing Spondylitis (RAS) or Psoriatic Arthritis (RPsA), and a group of sex-age matched healthy controls (HC). Each subject underwent clinical and ultrasonographic evaluation. All RAS subjects were tested for the presence of HLA-B27. Demographic and clinical data were recorded including presence of comorbidities, physical activity and body-mass index. Two rheumatologists who were blinded to clinical examination performed the ultrasound evaluation. Ten enthesal sites were evaluated: bilateral quadriceps tendon, proximal and distal patellar ligament, Achilles tendon and plantar aponeurosis. Ultrasonographic enthesopathy (UE) was defined as the presence of at least one of the following characteristics: thickening, erosion, enthesophytes and/or bursitis. The Glasgow Ultrasound Enthesitis Scoring System (GUESS) was calculated, which range from 0 to 36, being 36 the highest involvement. An alternative model was tested, evaluating the addition of Power Doppler (PD) assessment to the GUESS. Differences among groups were compared using chi-squared test and ANOVA with post-hoc analysis (Games Howell) Interobserver agreement between both ultrasonographers was estimated by the intraclass correlation coefficient (ICC).

**Results:** We included 101 subjects from 5 rheumatology centers (RAS=44, RPsA= 13, HC=44). Clinical and demographic findings were comparable among groups. Fifty-two percent were men with a median age of 32 years (IQR: 24.5-41.5) and a median body mass index (BMI) of 25,4 (IQR 22.07-28.14). Eighteen RAS subjects (40.9%) were HLA-B27 positive. A total of 1010 enthesal sites were evaluated. Eighty-nine of 101 subjects (88.1%) showed at least one UE, being enthesophyte at the Achilles tendon, thickening at the proximal and distal insertions of the patellar tendon (51%, 46% and 40%, respectively) the most frequent findings. US evaluation demonstrated a higher frequency of enthesal involvement in Spondyloarthritis relatives (RAS and RPsA) when compared to HC at the following sites: Left sub-quadriceps bursa (15.8% vs 2.3% p=0.04), thickening at the proximal insertion of the left patellar tendon (12.3% vs 0% p=0.018) and thickening of the left Achilles tendon (15.8% vs 0% p=0.005). The mean GUESS score in the three groups were: RAS: 5.16 ±3.22, RPsA: 4.15 ± 5.33 and HC: 3.52 ±2.69. The mean GUESS score was significantly higher in RAS group as compared to HC (p=0.031). Mean GUESS was higher in HLA-B27 subjects as compared with those negatives (5.50 ±3.34 vs 4.92 ±3.18, p value =0.56).

**Conclusions:** First degree relatives of patients with SpA had a higher frequency of enthesopathy and a higher GUESS score than healthy controls.