

# HUBUNGAN DERAJAT EDEMA OTOT DAN FASCIAL REGIO FEMUR DENGAN SKOR *SYSTEMIC LUPUS ERYTHEMATOSUS DISEASE ACTIVITY INDEX* (SLEDAI) DAN C-REACTIVE PROTEIN (CRP)

## Studi pada populasi *Systemic Lupus Erythematosus* menggunakan *Magnetic Resonance Imaging*

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### ABSTRAK

#### Pendahuluan:

*Systemic Lupus Erythematosus* (SLE) merupakan penyakit autoimun multisistem dengan keterlibatan muskuloskeletal yang sering dijumpai, termasuk miositis. Aktivitas penyakit umumnya dinilai menggunakan *Systemic Lupus Erythematosus Disease Activity Index* (SLEDAI), sedangkan C-*Reactive Protein* (CRP) digunakan sebagai biomarker inflamasi fase akut, meskipun hubungannya dengan aktivitas penyakit SLE masih bervariasi. *Magnetic Resonance Imaging* (MRI) merupakan modalitas sensitif untuk mendeteksi edema otot dan fascial sebagai gambaran inflamasi muskuloskeletal. Penelitian ini bertujuan menganalisis hubungan derajat edema otot dan fascial regio femur pada MRI dengan skor SLEDAI dan kadar CRP pada pasien SLE.

#### Metode:

Penelitian analitik observasional dengan desain cross-sectional dilakukan di RSUP Dr. Kariadi Semarang pada Januari 2025 terhadap 50 pasien SLE yang dipilih secara *consecutive sampling*. Pasien dengan penyakit autoimun lain, keganasan, infeksi HIV, alergi gadolinium, atau data rekam medis yang tidak lengkap dieksklusi. MRI femur dengan kontras (1,5/3 Tesla) menggunakan sekuens T1WI, T1WI kontras, T2WI, T2 FatSat, dan DWI untuk menilai derajat edema otot dan fascial (grade 0–3). Aktivitas penyakit fase aktif dinilai menggunakan skor SLEDAI, sedangkan inflamasi fase akut dinilai berdasarkan kadar CRP. Analisis menggunakan uji korelasi Spearman Rank ( $p < 0,05$ ).

#### Hasil:

Rerata usia subjek 38 tahun (19–74 tahun), 64% perempuan dan 36% laki-laki. Rerata skor SLEDAI  $12,48 \pm 4,47$  dengan mayoritas *high activity* (62%). Derajat edema otot tidak berkorelasi dengan skor SLEDAI ( $p = 0,017$ ;  $p = 0,906$ ) maupun CRP ( $p = -0,092$ ;  $p = 0,526$ ). Derajat edema fascial juga tidak berkorelasi dengan skor SLEDAI ( $p = -0,117$ ;  $p = 0,419$ ), derajat aktivitas SLEDAI ( $p = -0,038$ ;  $p = 0,793$ ), maupun CRP ( $p = 0,004$ ;  $p = 0,977$ ). Durasi penyakit berkorelasi dengan edema otot ( $p = 0,444$ ;  $p = 0,001$ ) dan edema fascial ( $p = 0,379$ ;  $p = 0,007$ ).

#### Kesimpulan:

Derajat edema otot dan edema fascial regio femur pada MRI tidak berkorelasi signifikan dengan skor maupun derajat aktivitas SLEDAI serta kadar CRP pada pasien SLE. Durasi penyakit berpotensi menjadi faktor perancu terhadap hubungan antara aktivitas penyakit dan temuan edema pada MRI.

**Kata Kunci:** *Systemic Lupus Erythematosus*, Edema Fascial, Edema Otot, SLEDAI, CRP

# **Correlation Between Degree of Thigh Muscle and Fascial Edema with Systemic Lupus Erythematosus Disease Activity Index (SLEDAI) Score and C-Reactive Protein (CRP): A Study On The Systemic Lupus Erythematosus Population Using Magnetic Resonance Imaging**

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## **ABSTRACT**

### **Background:**

Systemic Lupus Erythematosus (SLE) is a multisystem autoimmune disease frequently involving the musculoskeletal system, including myositis. Disease activity is commonly assessed using the Systemic Lupus Erythematosus Disease Activity Index (SLEDAI), whereas C-Reactive Protein (CRP) serves as an acute-phase inflammatory biomarker, although its association with SLE disease activity remains inconsistent. Magnetic Resonance Imaging (MRI) is a sensitive imaging modality for detecting muscle and fascial edema as indicators of musculoskeletal inflammation. This study aimed to analyze the association between femoral muscle and fascial edema grades on MRI and SLEDAI scores and CRP levels in patients with SLE.

### **Methods:**

A cross-sectional observational analytic study was conducted at Dr. Kariadi General Hospital, Semarang, in January 2025 involving 50 patients with SLE selected by consecutive sampling. Patients with other autoimmune diseases, malignancy, HIV infection, gadolinium allergy, or incomplete medical records were excluded. Contrast-enhanced femoral MRI (1.5/3 Tesla) using T1WI, contrast-enhanced T1WI, T2WI, T2 FatSat, and DWI sequences was performed to assess muscle and fascial edema (grades 0–3). Active disease was evaluated using the SLEDAI score, while acute-phase inflammation was assessed by CRP levels. Data were analyzed using Spearman's rank correlation test ( $p < 0.05$ ).

### **Results:**

The mean age was 38 years (range 19–74 years), 64% were female and 36% were male. The mean SLEDAI score was  $12.48 \pm 4.47$ , with most patients classified as having high disease activity (62%). Muscle edema grade was not significantly correlated with the SLEDAI score ( $p = 0.017$ ;  $p = 0.906$ ) or CRP level ( $p = -0.092$ ;  $p = 0.526$ ). Fascial edema grade was also not significantly correlated with the SLEDAI score ( $p = -0.117$ ;  $p = 0.419$ ), SLEDAI activity category ( $p = -0.038$ ;  $p = 0.793$ ), or CRP level ( $p = 0.004$ ;  $p = 0.977$ ). Disease duration was significantly correlated with muscle edema ( $p = 0.444$ ;  $p = 0.001$ ) and fascial edema ( $p = 0.379$ ;  $p = 0.007$ ).

### **Conclusion:**

The degree of muscle and fascial edema in the femoral region on MRI were not significantly correlated with SLEDAI score, SLEDAI activity level, or CRP levels in SLE patients. Disease duration may act as a potential confounding factor in the relationship between disease activity and MRI edema findings.

**Keywords:** *Systemic Lupus Erythematosus, Fascial Edema, Muscle Edema, SLEDAI, CRP*