



Example Fat Fraction Map

Abstract FRI0582 – Figure 1. Example Fat Fraction Map

Conclusions: In the present study, we reported a segmentation framework based on unsupervised k-means to measure muscle volume and fat fraction. It offers time savings versus manual segmentations and correlates well with fat fraction measurements. This could be useful for muscle quantification in the fields of osteoarthritis, sports medicine and rehabilitation. Further studies are planned to compare sensitivity of automatically acquired measures to clinical progression.

Acknowledgements: 1. Amato AA et al. *Neurology*. 2014 83(24):2239–46. 2. Beattie, K., Davison, M.J., Noseworthy, M. et al. *Rheumatol Int* (2016) 36: 855. <https://doi.org/10.1007/s00296-016-3455-x>

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CLINICAL UTILITY OF ANA-ELIA VS ANA-IMMUNOFLUORESCENCE IN CONNECTIVE TISSUE DISEASE

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Background: Antinuclear antibody (ANA) detection by indirect immunofluorescence technique (ANA-IIF) is the standard test for connective tissue disease (CTD) screening for last 5 decades, which has low specificity and it is labour intensive. ANA detection by fluoroenzyme immunoassay (ANA-Elia) has been developed recently as an alternative method to include 17 ANA-targeted recombinant antigens.

Objectives: Compare the sensitivity and specificity of the new ANA-Elia with conventional ANA-IIF.

Methods: Randomly selected 1458 patient's sera from primary and secondary health care were tested for both the standard ANA-IIF (Diasorin S.P.A, saluggia, Italy) and the new ANA-Elia (Phadia GmbH, Ferieiburg, Germany). ANA-Elia is fluoroenzyme immunoassay performed on the Phadia-250 automated platform. It contains 17 ANA-targeted recombinant antigens; dsDNA, Sm-D, Rib-P, PCNA, U1-RNP (70, A, C), SS-A/Ro (52 and 60), SS-B/La, Centromere B, Scl-70, Fibril-larin, RNA Polymerase III, Jo-1, Mi-2, and PMScl. Result with ratio >1.0 considered positive for the new technique. For ANA-IIF our lab cut off for positive test is $\geq 1:80$. Patients were evaluated in our rheumatology clinic for fulfilling the corresponding international clinical criteria for various connective tissue diseases.

Results: 75.7% were females with mean age of 43 ± 13 years. 201 (11.5%) patients confirmed to have clinical CTD as follow: 142 SLE, 24 Sjogren's syndrome, 15 scleroderma, 7 MCT, 10 Myositis and 10 undifferentiated CTD. The specificity of ANA-Elia at cut off ratio of >1 and ANA-IIF at titer of $\geq 1:80$ was almost equal, 88.5% and 87.6% respectively. However, ANA-Elia has higher sensitivity (74.5%) as compared to ANA-IIF (61.6%). At a higher cut off ratio of >2 and titer of $\geq 1:160$, the specificity improved to 93.6%–92.6% respectively.

	ANA-Elia		ANA-IIF	
	>1	>2	$\geq 1:80$	$\geq 1:160$
Sensitivity	74.5%	67.6%	61.6%	50.7%
Specificity	88.5%	93.6%	87.6%	92.6%

Conclusions: The ANA testing with the newly developed, use friendly, fully automated and less labour intense method of ANA-Elia can replace the standard conventional ANA-IIF with better specificity.

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FLUORESCENCE OPTICAL IMAGING ENHANCEMENT IS ASSOCIATED WITH JOINT PAIN IN HAND OSTEOARTHRITIS

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Background: Joint inflammation plays a role in the pathogenesis of hand osteoarthritis (OA), and previous studies have presented an association between pain and synovitis detected by MRI and ultrasound. No previous hand OA studies have explored the validity of fluorescence optical imaging (FOI), a novel imaging technique demonstrating altered microcirculation in wrist and finger joints, as a sign of inflammation.

Objectives: The aims of the current study were to quantify the distribution of FOI-findings in different joint groups in hand OA patients and explore the association between FOI findings and self-reported pain and tender joints on clinical examination.

Methods: The NOR-HAND study is an observational hand OA study, in which 251 patients (88% female, median age 61 (interquartile range 56–66) years) underwent FOI of both hands, bilateral clinical examination for tender joints on palpation and movement, and self-reported their pain in individual joints during the last 24 hours and the last 6 weeks on the homunculus. The FOI-scan was performed after the administration of an intravenous fluorescence dye (indocyanine green, ICG) and 360 images (1/second) were produced in 6 min. Based on the inflow and washing out of the dye the pictures were divided into 3 phases. Ultimately, the prima vista mode (PVM) represented a composite picture of the first 240 images of the examination. For each phase, fluorescence enhancement in the joints was graded from 0–3 based on signal intensity (grade 1=diffuse red, grade 2=intense red and diffuse white <50% of the joint, grade 3=intense white >50% of the joint). To study the association between FOI findings and pain in the same joint we applied logistic regression analyses with generalised estimating equations adjusting for age and sex. Separate models were applied for each of the FOI phases and pain outcomes.

Results: The median (interquartile range) number of DIP/PIP joints with FOI enhancement within each patient ranged from 0 (0–0) in phase 1, 14^{11-16} in phase 2, 3 (0–8) in phase 3 and 9^{7-11} in PVM. CMC-1 and MCP-joints showed no and uncommon enhancement on the examination, respectively, regardless of the phase, and the associations between FOI and pain were therefore analysed in the DIP and PIP joints only. FOI enhancement in the DIP and PIP joints was associated with pain in the same joint, consistent for all three pain outcomes. A dose-