Methods: This retrospective study included 74 SLE patients and 79 age- and sex-matched healthy subjects. According to the SLEDAI-2K score, SLE patients were divided into Group 1 with a score ≤ 9 (patients with mild disease activity, $N = 41$) and Group 2 with a score > 9 (patients with moderate to severe disease activity, $N = 33$). Neutrophil, lymphocyte, monocyte, platelet, albumin, fibrinogen, NLR, PLR, monocyte to lymphocyte ratio (MLR), FAR, C-reactive protein (CRP), erythrocyte sedimentation rate (ESR), complement 3 (C3), complement 4 (C4) and SLEDAI-2K were collected. Receiver operation characteristic (ROC) curves were conducted to discriminate SLE patients from healthy controls and SLE patients with different disease activity. Correlations between the inflammatory markers and SLEDAI-2K were analyzed.

Results: FAR, NLR, PLR, MLR and fibrinogen in SLE patients were higher compared to those of the healthy controls ($P < 0.05$), while albumin was lower ($P < 0.05$). Patients in Group 2 had higher levels of FAR, NLR, PLR, fibrinogen and CRP than those in Group 1 ($P < 0.05$) except MLR ($P = 0.579$) and ESR ($P = 0.130$), albumin and C3 were lower ($P < 0.05$). Furthermore, FAR were higher in SLE patients with nephritis than those without nephritis ($P = 0.009$). The ROC curve for differentiating SLE patients from healthy individuals showed that the area under curve (AUC) of FAR (0.801, 95%CI: 0.728 - 0.874) and albumin (0.833, 95%CI: 0.764-0.903) were higher than NLR (0.798, 95%CI: 0.725 - 0.871), PLR (0.680, 95%CI: 0.588 - 0.771), MLR (0.785, 95%CI: 0.712 - 0.859) and fibrinogen (0.645, 95%CI: 0.556 - 0.733). Besides, the ROC curve for predicting the disease activity of SLE patients indicated that the AUC of FAR (0.911, 95%CI: 0.842 - 0.980) was higher than NLR (0.697, 95%CI: 0.574 - 0.821), PLR (0.695, 95%CI: 0.571 - 0.820), MLR (0.553, 95%CI: 0.415 - 0.691), fibrinogen (0.718, 95%CI: 0.590 - 0.847), CRP (0.672, 95%CI: 0.540 - 0.803), ESR (0.640, 95%CI: 0.510 - 0.770), C3 (0.644, 95%CI: 0.515 - 0.773), C4 (0.544, 95%CI: 0.407 - 0.681) and albumin (0.894, 95%CI: 0.819 - 0.969). FAR was positively correlated with SLEDAI-2K ($r = 0.682$, $P < 0.001$), yielding a highest relevance than other inflammatory parameters.

Conclusion: FAR was significantly elevated in SLE patients compared with healthy subjects and related with the disease activity of SLE. FAR might be a useful inflammatory index to evaluate disease activity in patients with SLE.

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POS1444 ADOPTION OF DIGITAL MANIKINS TO SELF-REPORT PAIN: A SYSTEMATIC REVIEW

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Background: Chronic pain is common in rheumatic and musculoskeletal conditions, and a major driver of disability worldwide. Knowledge gaps exist with respect to correct estimates of chronic pain [1], what causes it and how best to manage it [2]. To address this, researchers need validated methods to measure pain in large, representative populations. Though many authors have recognised the potential benefits of paper-based and digital pain manikins [3]–[5], it is unknown to what extent studies have adopted digital manikins as a data collection tool.

Objectives: The objective of our review was to identify and characterise published studies that have used digital pain manikins as a data collection tool.

Methods: We systematically searched six electronic databases, including Medline, CINAHL, Embase, Scopus, IEEE Xplore digital library, ACM Digital Library, on 3-4 of November 2020 by using a pre-defined search strategy. We included a study in our review if it used a digital manikin for self-reporting any pain aspect (e.g., intensity, type) by people suffering from pain, and if its full text was published in English. We conducted this review by following the PRISMA reporting guidelines and conducted a descriptive synthesis of findings, including manikin-derived outcome measures.

Results: Our search yielded 4,685 unique studies. After full text screening of 705 articles, we included 14 studies in our review. Most articles were excluded because they used either paper-based manikins or didn't include enough details to determine that the manikin was digital ($n=386$). The majority of included studies were published in Europe ($n=11$). Most studies collected data on a manikin once ($n=11$); from people with pain conditions ($n=9$); and in clinical settings ($n=9$). There was only one study that collected digital pain manikin data in a large sized (i.e., ~20,000) population-based survey.

In most studies participants shaded any painful area on manikin ($n=9$) and did not enable participants to record location-specific pain aspects ($n=11$). None of the manikins enabled participants to record location-specific pain intensity. Pain distribution (i.e. number or percentage of pre-defined body areas or locations experiencing pain) and pain extent (i.e. number or percentage of shaded pixels) were commonly used manikin-derived outcome measures. In six studies, a heat map was used to summarise the extent of pain across the population.

Conclusion: Digital pain manikins have been available since the 1990s but their adoption in research has been slow. Few manikins enabled location-specific pain recording suggesting that the digital nature of the manikin is not yet fully utilised. Future development of a validated digital pain manikin supporting self-reporting of the location and intensity of pain, usable across any device and screen size, may increase uptake and value.

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POS1445 RETINOL BINDING PROTEIN 4 AS AN ACUTE PHASE REACTANT AND BIOMARKER IN PATIENTS WITH FAMILIAL MEDITERRANEAN FEVER AND AMYLOIDOSIS COMPARED TO INFECTIONS

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Background: Retinol binding protein 4 (RBP4) is a plasma retinol transporter that transports retinol from liver to periphery. RBP4 has been studied as a biomarker in metabolic and neoplastic conditions, however its association with inflammation is not clear. Serum amyloid A (SAA), another retinol binding protein, has been known as a sensitive biomarker of inflammation in familial Mediterranean fever (FMF) and other autoinflammatory disorders. C-reactive protein (CRP), erythrocyte sedimentation rate (ESR) and SAA are commonly used as acute phase reactants, but they are not successful in differentiating non-infectious inflammatory conditions from infections.

Objectives: We aimed to evaluate the potential of serum RBP4 as a biomarker of acute phase response and to determine its performance in differentiation of inflammation of patients with FMF and AA amyloidosis from infections.

Methods: A total of 169 participants in 5 groups, consisting of FMF ($n = 60$), FMF with AA amyloidosis ($n = 58$), non-FMF AA amyloidosis ($n = 23$), infections ($n = 10$, 3 pneumonia, 3 sepsis, 1 pyelonephritis, 1 fungal infection, 1 cellulitis, 1 disseminated zoster), and healthy controls (HC) ($n = 18$), were included and evaluated cross sectionally. Hemogram and serum CRP, ESR, SAA, ferritin, creatinine, AST, ALT, albumin levels were recorded from the patient charts. FMF and FMF + amyloidosis patients were evaluated during attack-free period. Serum RBP4 levels were investigated by ELISA (Elabscience, USA). Mean values and relative changes compared to healthy controls were evaluated for SAA, CRP, RBP4 levels in all groups.

Results: Serum RBP4 level was found to be higher in FMF group compared to the patients with infection ($p = 0.002$) and HC ($p < 0.001$) as well as in patients with amyloidosis. Compared to HC, 47%, 28% and 27% increase was observed in mean RBP4 levels in FMF, FMF + amyloidosis and non-FMF amyloidosis patients, despite no significant change in patients with infections. However, CRP and SAA elevations were much more prominent in patients with infections (58 and 134 times, respectively) compared to the patients with FMF (13 and 35 times, respectively), FMF + amyloidosis and non-FMF amyloidosis (Table 1). There was no significant difference in RBP4 levels between FMF, FMF-amyloidosis and non-FMF amyloidosis groups. CRP, ESR, ferritin and SAA levels were higher in the infection group compared to HCs.