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**Abstracts** **Open Access**

# Retargeting old drugs as components of multi-target therapy in prevention of steroid-induced osteonecrosis: A randomized controlled clinical trial. A preliminary report

**Maryam Loghman[1,2], Babak Fallahi[3], Leila Aghaghazvini[4],Amir Kasaian[5], Majid Alikhani[6], Mohsen Rokni[7,8], Esmat Abdollahpour[9], Mohammad Nejadhosseinian[6]**

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Corticosteroid consumption represents the primary cause of non-traumatic osteonecrosis. Numerous pathways and mechanisms have been identified. Therefore, employing combination therapy to target these diverse pathways holds promise in preventing osteonecrosis. This study aims to investigate the effectiveness of multiple target therapy in preventing steroid-induced osteonecrosis. A parallel two-arm randomized clinical trial (RCT) was conducted. The study enrolled adult patients aged over 18 years, who were undergoing treatment with high-dose corticosteroids (> 30 mg). The intervention group was administered a daily dosage of atorvastatin, aspirin, and vitamin E, and a weekly dose of alendronate. In contrast, the control group only received a weekly dose of alendronate. The primary endpoint of the study was the incidence of avascular necrosis, as assessed through three-phase SPECT bone scintigraphy and magnetic resonance imaging (MRI), were performed at 3 and 12 months after the initiation of treatment.The study included a total of 29 evaluated patients, with 16 in the intervention group and 13 in the control group. No significant differences were observed between the two groups in terms of gender and age distribution. Within the intervention group, osteonecrosis developed in 6 patients, involving a total of 11 joints. Conversely, the control group exhibited osteonecrosis in 7 patients, affecting 14 joints. The initial findings from this RCT suggest that a multi-target therapy could potentially prove effective in both preventing and mitigating steroid-induced osteonecrosis. This observation did not reach statistical significance.

***Key words:*** Avascular necrosis; Corticosteroid; Multi-target therapy; Steroid-induced osteonecrosis


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# Could positive anti-Ro/SSA antibody induce cardiac conduction abnormalities in patients with connective tissue disease?

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Antibodies cause certain symptoms and complications in patients with autoimmune diseases. The role of anti-Ro/SSA antibody has been proven in several symptoms of patients with connective tissue disease such as systemic lupus erythematosus and Sjogren's syndrome. Also, the role of these antibody in causing cardiac conduction complications in fetuses of mothers with positive anti-Ro/SSA has been proven. However, there are few and contradictory studies about its role in cardiac conduction disorders in adults. Our study investigated the relationship between anti-Ro/SSA and cardiac conduction disorders in adult patients with Ro/SSA antibody. A case-control study was conducted on patients with connective tissue diseases who were referred to the rheumatology clinic of Shariati Hospital in Tehran. The case group consisted of 50 anti-RO/SSA antibody-positive patients and the control group consisted of 45 patients without antibodies whose age and sex were matched. The demographic, clinical, and para-clinical findings of the patients were recorded. Also, a 12-lead electrocardiogram was taken from all patients.The findings of the present study were conducted on 95 patients with autoimmune connective tissue disease, including 50 anti-Ro/SSA antibody-positive patients (case group) and 45 anti-Ro/SSA antibody-negative patients (control group). The patients with positive anti-Ro/SSA significantly had a longer QT interval (4 times) and corrected QT than patients with negative anti-Ro/SSA (P = 0.0001). Also, other ECG items including heart rate, PR interval, rhythm, and QRS duration were higher in patients with positive anti-RO/SSA than in patients with negative anti-RO, but these differences were not significant. Also, in the heart echocardiography findings, global longitudinal strain (GLS) in patients with positive anti-Ro/SSA was lower than in patients with negative anti-Ro/SSA and was in the normal range, but other echocardiography findings in both groups were in the normal range and no differences were observed between the groups.The results of our study showed that in patients with autoimmune diseases with a positive anti-Ro/SSA, the probability of heart complications in the form of long QT is 4 times higher than in autoimmune patients with negative anti-Ro/SSA. So, the importance of screening and follow-up of patients with positive anti-Ro/SSA is recommended.

***Key Words:*** Connective tissue diseases; QT interval; anti-Ro/SSA antibody; Electrocardiography


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**Abstracts** **Open Access**

# A symptomatic avascular necrosis, a commonly overlooked finding in patients with systemic lupus erythematosus

**Forough Nadi[1*], Esmat Abdollahpour[2], Seyedeh Tahereh faezi[1], Babak Fallahi[3], Leila Aghaghazvini[4], Majid Alikhani[1], Mohammad Nejadhosseinian[1]**

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Systemic lupus erythematosus (SLE) is a chronic autoimmune disease that affects multiple organs. Osteonecrosis of various joints is a debilitating complication associated with SLE and its treatment. Recognizing the crucial role of early detection, as well as appropriate management of asymptomatic osteonecrosis, in preventing joint destruction, we conducted a study to evaluate the prevalence of asymptomatic osteonecrosis in SLE patients who have already been diagnosed with symptomatic osteonecrosis. This evaluation was performed utilizing three-phase SPECT bone scintigraphy and magnetic resonance imaging (MRI). Our study underscores the importance of surveillance for asymptomatic osteonecrosis in this specific population. In this prospective cross-sectional study, patients with recently diagnosed symptomatic osteonecrosis were selected by reviewing the data from the digital medical record system of the Rheumatology Research Center, and their demographic and clinical data were retrieved. The patients underwent three-phase SPECT bone scintigraphy to detect joints with suspected asymptomatic osteonecrosis. The diagnosis of osteonecrosis was confirmed with MRI of the involved joint in bone scintigraphy. The significance of the connection between two categorical factors was evaluated using Fisher's exact test. The Mann-Whitney U test was employed to examine the differences in various variables between patients with and without asymptomatic osteonecrosis. Out of the 17 patients who participated in our research, 8 (47%) were found to have asymptomatic osteonecrosis. The most commonly affected joints, as determined by three-phase SPECT bone scintigraphy and confirmed by MRI, were the left knee (37.5%), followed by the right knee and right ankle (each accounting for 25% of cases). Among the patients, 75% had stage 2 osteonecrosis, while 25% had stage 3. The only statistically significant difference observed between patients with and without asymptomatic osteonecrosis in this study was the age at which the disease first appeared (P = 0.046). No other significant differences were found in demographic variables, including age and gender, or clinical variables, such as disease duration and the use of corticosteroid and cytotoxic drugs, between patients with and without asymptomatic osteonecrosis. Our research provides additional support for the elevated occurrence of asymptomatic osteonecrosis in individuals with SLE and highlights the significance of early detection and prompt intervention in order to avert the incapacitating effects of osteonecrosis.

***Keywords***: Avascular necrosis; Systemic lupus erythematosus; Osteonecrosis; Three-phase SPECT bone scintigraphy


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**Abstracts** **Open Access**

# The effect of pain neuroscience education and blended exercises on pain, function and psychological factors in knee osteoarthritis: A single-blind randomized controlled trial

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The purpose of this study was to investigate the effect of pain neuroscience education (PNE) in combination with blended exercises (B-Exe) including aerobic, resistance, breathing, balance, and functional exercises, along with exercises booster sessions (EBS) on pain, functional and psychological factors in knee osteoarthritis (KOA). In this randomized controlled clinical trial (RCT), 129 patients with KOA were randomly assigned to one of the B-Exe, PNE, the combination of PNE+B-Exe, and a control group. The primary outcome was VAS and WOMAC. Secondary outcomes include Pain Self-Efficacy Questionnaire, Depression, Anxiety and Stress Scale, Tampa Scale for Kinesiophobia, Short Falls Efficacy Scale International, Pain Catastrophizing Scale, Short Form Health Survey (SF-12) and Exercise Adherence Rating Scale (EARS), 30-second chair sit-to-stand test, Timed Up and Go, lower limbs' muscle strength and lower limb joints' active range of motion were performed at baseline, 3 and 6 months. In the inter-group findings, the outcome improvement was significant ($P < 0.05$) for the PNE+B-Exe, B-Exe, and PNE groups. The inter-group comparison of the first post-test with the second post-test showed that both the B-Exe and PNE+B-Exe group had improvement ($P < 0.05$) or lasting effects in all outcomes. In the intra-group findings, significant differences were observed between the PNE+B-Exe and both the PNE and control group in all outcomes ($P < 0.05$). At the end of the study, there was a significant difference in EARS results between the B-Exe and PNE+B-Exe groups ($P < 0.05$). We found that the B-Exe and PNE+B-Exe groups had the greatest effect on pain, psychological, and functional factors in KOA.

***Keywords:*** Knee osteoarthritis; Pain neuroscience education (PNE); Therapeutic exercises; Pain; Function; Psychological factors; Non-pharmacological interventions


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# CXCL9 and NT-proBNP: A notable link between inflammatory mediator and cardiac biomarker in rheumatoid arthritis

**Afsaneh Shamsi[1], Seyed Askar Roghani[1,2,3], Parviz Soufivand[3], Mehran Pournazari[3], Fatemeh Khoobbakht[1], Fariborz Bahrehmand[4], Mahdi Taghadosi[1*]**

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Cardiovascular disease (CVD) is the most critical extra-articular manifestation of rheumatoid arthritis (RA), and inflammatory molecules mainly contribute to its pathogenesis. Recently CXCL9 (chemokine (C-X-C motif) ligand 9) has been considered an inflammatory chemokine associated with the pathogenesis of CVD. For the first time, in the current study, we evaluated the association of plasma CXCL9 with well-established cardiac biomarkers, including high sensitivity C-reactive protein (hs-CRP) and NT-proBNP (N-terminal pro–B-type natriuretic peptide), in newly diagnosed and under-treatment RA patients.Thirty newly diagnosed, 30 under-treatment RA patients, and 30 healthy subjects were recruited in this study. The plasma concentration of CXCL9 and NT-ProBNP was measured using the enzyme-linked immunosorbent assay (ELISA) method. The hs-CRP concentration was evaluated in plasma samples using ADVIA 1800 Clinical Chemistry System based on latex-enhanced immunoturbidimetric. The mean serum concentration of CXCL9, NT-proBNP, and hs-CRP was remarkably different between healthy subjects, newly diagnosed, and under-treatment RA patients ($P < 0.001$, $P = 0.016$ and $P < 0.001$, respectively). We found a significant positive correlation between CXCL9 and DAS-28 ($P = 0.0005$, r = 0.436) in the patients' group (new-case + under-treatment). There was a significantly positive correlation between CXCL9 with NT-proBNP in newly diagnosed and under-treatment patients ($P = 0.020$, r = 0.424; $P < 0.0001$, r = 0.853, respectively). In the patient's group (new-case + under-treatment), There was a significantly positive correlation between CXCL9 with NT-proBNP ($P < 0.001$, r = 0.703) and CXCL9 with HS-CRP ($P = 0.015$, r = 0.313). CXCL9 as an inflammatory biomarker has a remarkable association with well-established cardiovascular biomarkers, including hs-CRP and NT-ProBNP in RA patients.

***Keywords:*** Cardiovascular; Rheumatoid arthritis; CXCL9; NT-proBNP; hs-CRP; DAS-28


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# Evaluation of the relationship between opioid addiction and metabolic syndrome and its components in the adult population from Rafsanjan city; A cohort study

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We aimed to assess the association between opioid addiction and metabolic syndrome (MetS) risk and its components. We used data obtained from the Rafsanjan Cohort Study (RCS), as a part of the prospective epidemiological research studies in Iran (PERSIAN). The diagnosis of MetS was accomplished using three criteria of the International Diabetes Federation (IDF), Iranian IDF, and National Cholesterol Education Panel-Adult Treatment Panel III (NCEP-ATP III). Using a questionnaire, data for the demographic, anthropometric, and laboratory indices was collected.The prevalence of MetS was 38.30, 31.58, and 34.42% based on the IDF international, IDF Iranian, and NCEP-ATP III criteria. According to the IDF international criteria, 666 (17.45%) cases were using opioids and there was a statistically significant difference between opioid use and prevalence of MetS ($P < 0.001$). Based on the NCEP-ATP III criteria, there was a significant difference in the prevalence of MetS based on opioid use ($P < 0.001$). Use of opioids was associated significantly with a decreased odds of MetS in the multivariate model based on the IDF international (Adjusted OR = 0.85, 95% CI 0.74–0.98) and IDF Iranian criteria (Adjusted OR = 0.83, 95%CI = 0.72–0.95). Prevalence of MetS was lower in subjects using opioids. Opioid use was associated with a decreased risk of MetS development.

***Keywords:*** Metabolic syndrome; Opioid; International Diabetes Federation; National Cholesterol Education Panel-Adult Treatment Panel III; Prospective Epidemiological Research Studies in Iran (PERSIAN)


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# Interleukin 23 receptor gene polymorphisms and their role in the inflammatory status of rheumatoid arthritis patients in Iranian population

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Several investigations have disclosed the involvement of interleukin (IL)-23/IL-17 pathway in rheumatoid arthritis (RA) pathogenesis. Here we investigated the association of single nucleotide polymorphisms (SNPs) in the *IL23 receptor* (*IL23R*) gene with RA risk. In addition, the role of these SNPs with the inflammatory state of the patients were determined.In this case-control study, 200 RA cases and 200 healthy subjects were recruited. Using allelic discrimination Real-time PCR, both *IL23R* rs10489629 and rs1004819 SNPs were genotyped. The mRNA expression levels of IL-23R, IL-23, and IL-17A were determined in the peripheral blood mononuclear cells (PBMCs). The serum levels of IL-23 and IL-17A were also determined.The A allele (OR = 1.52, 95% CI: 1.15-2.01; *P* = 0.0030), AA genotype (OR = 2.41, 95% CI: 1.33-4.35; *P* = 0.0035), and AG genotype (OR = 2.55, 95% CI: 1.56-4.16, *P*= 0.0002) of rs1004819 SNP was significantly associated with increased RA risk. The mRNA expression of IL-17A (fold change = 2.55, *P* = 0.0003), IL-23 (fold change = 1.62, *P*= 0.0081), and IL-23R (fold change = 1.59, *P* = 0.0077) was significantly upregulated in the PBMCs from RA patients compared to that of healthy controls. Serum levels of IL-17A (*P* = 0.0002) and IL-23 (*P* = 0.0006) was significantly higher in the RA patients compared to the controls. No significant association was detected between patient data and SNPs. The IL-23/IL-27 pathway plays a role in RA pathogenesis, but *IL23R* gene rs1004819 SNP might not be regulating this pathway in RA disease.

***Keywords:*** Rheumatoid arthritis; Single nucleotide polymorphism; IL-23R; IL-23; IL-17A


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# Association of interleukin 33 gene polymorphisms with susceptibility and regulation of inflammatory mediators in systemic lupus erythematosus patients

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This research intended to evaluate the association of IL33 gene rs1929992 and rs7044343 single nucleotide polymorphisms (SNPs) with risk of systemic lupus erythematosus (SLE). In addition, the association between these SNPs and inflammatory cytokines was determined.In this study, 200 SLE cases and 200 healthy subjects were recruited. Using allelic discrimination Real-time PCR, IL33 gene rs1929992 and rs7044343 SNPs were genotyped. The mRNA expression levels of IL-1β, IL-6, IL-33, TNF-α were determined in the peripheral blood mononuclear cells (PBMCs). The serum levels of cytokines were also measured. The G allele, GG genotype, and GA genotype of rs1929992 SNP was significantly associated with an increased SLE risk. The C allele, CC genotype, and CT genotype of rs7044343 was significantly associated with increased SLE risk. The PBMC mRNA expression and serum levels of IL-1β, IL-6, IL-33, TNF-α were significantly increased in the SLE patients compared to controls. However, there was no significant difference in the mRNA expression and serum levels of IL-1β, IL-6, IL-33, and TNF-α among the SLE patients with three genotypes for both rs1929992 and rs7044343 polymorphisms.IL33 gene rs1929992 and rs7044343 SNPs are involved in SLE pathogenesis but they might not influence on the inflammatory pathway.

***Keywords:*** IL-33; Single nucleotide polymorphism; Systemic lupus erythematosus; Genotype


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**Abstracts** **Open Access**

# Implications of peptidyl arginine deiminase 4 gene transcription and polymorphisms in susceptibility to rheumatoid arthritis in an Iranian population

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Peptidyl arginine deiminase 4 (PADI4) has been implicated in rheumatoid arthritis (RA) pathogenesis. Here we aimed to evaluate the association of PADI4 gene rs11203367 and rs1748033 single nucleotide polymorphisms (SNPs) with RA proneness. The mRNA expression of PADI4 was determined in the whole blood samples. The genotyping of PADI4 polymorphisms was conducted using allelic discrimination TaqMan genotyping Real-time PCR. The alleles and genotypes of rs11203367 polymorphism were not associated with susceptibility to RA risk. The T allele (OR = 1.58, 95%CI: 1.21–2.04, P = 0.0005), TT genotype (OR = 2.79, 95%CI: 1.53–5.06, P=0.0007), TC genotype (OR = 1.52, 95% CI: 1.04–2.23, P = 0.0291), dominant (OR = 1.72, 95%CI: 1.19–2.47, P=0.0034) and recessive (OR = 2.19, 95% CI: 1.25–3.82, P = 0.0057) models of rs1748033 SNP were associated with higher risk of RA. There was a significant upregulation of PADI4 mRNA in the RA patients compared to controls. mRNA expression of PADI4 had significantly positive correlation with anti-CCP level (r = 0.37, P = 0.041), RF level (r = 0.39, P = 0.037), and CRP level (r = 0.39, P = 0.024). PADI4 gene rs1748033 SNP was associated with increased RA risk. This polymorphism might affect the RA pathogenesis regardless of impressing the levels of PADI-4 in serum.

***Keywords:*** Rheumatoid arthritis; Peptidyl arginine deiminase 4; Single nucleotide polymorphism; Genetic association


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# Evaluation of medical adherence status in patients referred to rheumatology clinic and its relation with laboratory data and demographic variables

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To evaluate the level of adherence to treatment of rheumatology clinic patients as an essential and new index in improving patients, which is still unknown in Iran, and search on the variables that can affect it for better treatment. A cross-sectional study was conducted among patients referred to a rheumatology clinic in Qom, Iran, in June 2023. Eighty-one patients who met the inclusion criteria were selected via the random sampling method. Data collection instruments included demographic information forms, Morisky Medication Adherence Scale questions, and laboratory data , pain severity score. The data were analyzed in SPSS software using descriptive tests and linear regression analysis.Based on the results, eighty patients (98.8% of the total population) had a poor level of adherence to treatment with an MMSA index score of less than 6. Also, the degree of treatment adherence significantly correlated with the amount of white blood cells in the laboratory data. There was no relationship between treatment adherence and inflammatory index (ESR or CRP), pain intensity, nursing care, financial status, age, or gender.It seems that the study on adherence to treatment and identification of factors affecting it in rheumatology patients, especially in Iran, has been neglected. Also, few studies, including this study, evaluate its severity as unfavorable. Due to the lack of correlation Between most demographic variables and treatment compliance, it seems necessary to study a larger population of patients with more variables, including psychological issues.

***Keywords***: Rheumatology; Treatment adherence; Treatment compliance; Patient compliance


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# Assessment of the relationship between sclerostin and bone mineral density in hemodialysis patients

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Number of kidney transplant and hemodialysis patients following chronic renal failure is on the rise. The use of new drugs increase in non-renal complications in these patients. One of these complications is bone involvement, which occurs as a decrease in bone mineral mass and increases the risk of fractures. In this study, the relationship between sclerostine and bone mineral density in a patient with dialysis-dependent renal failure was investigated.The study was performed on 90 patients with chronic renal failure. Patient profile data including age, sex, and underlying disease such as blood pressure and time of onset of hemodialysis and factors related to bone metabolism including calcium, phosphorus, albumin, alkaline phosphatase, parathyroid hormone, and vitamin D were measured in these patients. These patients were measured. For bone density measurement by BMD method using dual beam radiation absorption (DXA) QDR-4500A; Hologic was measured 21 to 48 hours after the end of dialysis session. Radiographs were taken of three parts: femoral neek, spinal boon and radius. The median sclerostine level in patients was 58.3 ng/dL. Although there was an inverse relationship between sclerostin and quantitative factors and bone density factors, the results of Spearman test did not show a significant correlation. Sclerostin levels were higher in female patients, diabetics and hypertensive patients. There was no significant relationship between sclerostin and sex, blood pressure and diabetes. High levels of sclerostine were associated with low levels of bone density. Decreased bone density occurs in patients with renal impairment. Therefore, it is better to start preventive and therapeutic measures from the beginning of dialysis or even before it.

***Keywords:*** Sclerostine; Bone density; Kidney failure; Osteopenia


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# Assessment the relationship between level of sclerostin and bone turnover markers in hemodialysis patients at Boali hospital in Qazvin in 2020

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Elevated osteocalcin levels are seen in bone diseases known as increased bone turnover. In renal osteodystrophic diseases, the concentration of osteocalcin increases. Therefore, in this study, the relationship between sclerostin levels and bone turnover markers in patients with dialysis-dependent renal failure was investigated.The study was performed on 90 patients with a diagnosis of chronic renal failure and referred to Bu Ali Hospital in Qazvin. Patient profile data including age, sex, and underlying disease such as blood pressure and time of onset of hemodialysis, and factors related to bone metabolism including calcium, phosphorus, albumin, alkaline phosphatase, and parathyroid hormone and vitamin D, other bone-building factors such as bone alkaline phosphatase and bone resorption factor NTX were measured in these patients and at the same time sclerostin levels were measured in these patients. For sampling, patients were fasting for 8 hours.The underlying diseases in patients were diabetes and hypertension. Serum levels of sclerostin, serum ALP and NTX were higher in women and bone ALP levels were higher in men. No significant relationship was observed between scrostine levels and ALP and NTX markers with sex factor. In patients with underlying diabetes or hypertension, median sclerostine levels were higher but ALP and NTX markers were lower. There was a direct and significant correlation between sclerostine and NTX. NTX had low potency in detecting sclerostine levels. Elevated sclerostine levels were associated with elevated levels of bone resorption markers. Identifying bone analysis markers in patients with underlying diseases is one of the most important measures that should be considered for timely diagnosis.

***Keywords:*** Sclerostine; Bone resorption marker; NTX; Hemodialysis


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# Changes in the level of antiphospholipid antibodies and thromboembolic indices in COVID-19 patients during 3 weeks

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COVID-19 is a respiratory disease caused by infection with severe acute respiratory syndrome Coronavirus 2 (SARS-CoV-2). Thrombotic complications appear to be of particular importance in patients with COVID-19. This study aimed to investigate Changes in the level of antiphospholipid antibodies (anticardiolipin and anti-β2-glycoprotein-I) and thromboembolic indices in COVID-19 patients during 3 weeks. This cross-sectional study was performed on adults with COVID-19 hospitalized at Al-Zahra Hospital in Isfahan. The case group includes the patients admitted to the internal ward or ICU who despite receiving prophylactic or anticoagulant doses suffer from thrombotic complications and the control group includes COVID-19 patients without thromboembolic events. The sample size of 120 people was considered. Anticardiolipin and anti-β2-glycoprotein-I antibodies, coagulation profiles including Fibrinogen, PTT, PT Troponin, ESR, CRP, and D-dimer were examined. After collection, the data were entered into spss24 software and analyzed. The results showed that there was no statistically significant difference in the changes of anticardiolipin and anti-beta-2 glycoprotein in IgM and IgG as well as in the changes of ESR, CRP, PTT, PT, and fibrinogen in the two groups ($P > 0.05$). Our study showed that there was no statistically significant relationship between anti-phospholipid antibodies (anticardiolipin and anti-beta-2 glycoprotein) and thromboembolic events. Therefore anticardiolipin and anti-beta-2 glycoprotein is probably the puzzles causing thrombosis in COVID-19 patients, and other inflammatory responses should be examined among the cases.

***Keywords:*** Antiphospholipid antibodies; COVID 19; Anticardiolipin; Anti beta 2 glycoprotein


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# Potential role of EBV and Toll-like receptor 9 ligand in patients with systemic lupus erythematosus

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Systemic lupus erythematosus (SLE) is a multisystem autoimmune disease characterized by multiple immunological abnormalities including production of autoantibodies. Production of IFN-α is important for protecting the host against infections; however, over stimulation of innate immune pathways can induce autoimmune disease. Environmental factors, particularly Epstein-Barr virus (EBV), have been proposed to play an important role in SLE disease. Improper engagement of Toll-like receptor (TLR) pathways by endogenous or exogenous ligands may lead to the initiation of autoimmune responses and tissue injury. EBV is shown to be a potent stimulant of IFN-α by TLR signaling cascades. Given the highlighted role of IFN-α in SLE pathogenesis and potential role of EBV infection in this disease, the present study is aimed at exploring the in vitro effects of EBV infection and CPG (either alone or in combination) on IFN-α. We also examined the expression level of CD20 and BDCA-4 and CD123 in PBMCs in 32 SLE patients and 32 healthy controls. Thirty-two SLE patients and 32 age and sex matched healthy controls were included in this study. Peripheral blood mononuclear cells (PBMCs) were separated from 5 ml fresh whole blood by a density gradient centrifugation using Ficoll-Paq.Our results showed PBMCs treated with CPG-induced higher levels of IFN-α and TLR-9 gene expression fold change compared to cells treated with either EBV or EBV-CPG. Moreover, PBMCs treated with CPG produced significantly higher IFN-α concentration in supernatant compared to cells treated with EBV but not EBV-CPG. Our results further highlight the potential role of EBV infection and TLRs in SLE patients although more studies are warranted to ascertain the global imprint that EBV infection can have on immune signature in patients with SLE. Our results show that CPG (endogenous ligand) play an important role on IFN-α production, our results further highlight the important role of CPG on IFN-α production (at both transcriptional and protein levels) and support the notion that a plausible interaction between EBV infection and endogenous ligand may facilitate the development of SLE although the exact mechanism needs to be further addressed.

***Keywords:*** Systemic lupus erythematosus; IFN-α; Epstein-Barr virus; CPG


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# Overall status of Epstein-Barr virus infection, IFN-a, and TLR-7/9 in patients with systemic lupus erythematous

**Shima Izadi[1], Seyed Reza Najafizadeh[2], Ahmad Nejati[1], Majid Teymoori-Rad[1], Shohreh Shahmahmoodi[1], FroughGolsaz Shirazi[3], Fazel Shokri[3], Sayed Mahdi Marashi[1*]**

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Systemic lupus erythematous (SLE) is a multisystem autoimmune disorder. While studying the pathogenesis of SLE is prevalent, both infectious and non-infectious elements are regarded to exert an important impact on the disease's development. To explore the overall status of EBV, TLR7, TLR9, and IFN-α gene expression in 32 patients suffering from SLE and 32 healthy controls.Plasma and PBMCs were separated from fresh whole blood. To measure EBV DNA load and mRNA levels of IFN-a, TLR-7 and9 in PBMCs, molecular techniques were employed. The production of IFN-α, ds-DNA IgG antibody, and EBNA-1 IgG levels were also measured in plasma by ELISA.SLE patients showed significantly higher EBV load (P = 0.001) and transcriptional levels of TLR7 (P = 0.0001), IFN-α (P = 0.0001), and TLR9 (P = 0.0001) than controls. Moreover, the plasma levels of IFN-α (P = 0.0002) and EBNA-1specific IgG antibodies (P = 0.01) were significantly higher in SLE patients.The results stressed on the potential role of EBV infection and TLRs in SLE patients although more research is needed to determine the global impact that EBV infection can have on immune signature in patients with SLE.

***Keywords:*** Epstein-Barr Virus; IFN-α; Systemic Lupus Erythematous; Toll-like Receptors


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**Abstracts** **Open Access**

# Auto-inflammatory disorders concept and adult-onset auto-inflammatory disorders

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The field of auto-inflammatory disorders (AIDs) has expanded significantly in the last decade. There are a number of new conditions which are included in this spectrum. Furthermore, recent advances in basic sciences have provided new insights into the innate-immune-mediated inflammatory responses. The innate and the adaptive immune system can of course not be seen as two completely separate entities. There are many areas in which the distinction is hard to make, for example in several types of regulatory T cells. In the same way, the disease categories “autoimmune” and “auto-inflammatory” should in many cases not be seen as completely separate. AIDs are primarily monogenic and caused by mutations in genes involved in the activation or regulations of the inflammatory response, being expected to occur during early life. Exceptions include gout, Behçet's syndrome (BS), Adult-onset Still's disease (AOSD), spondyloarthritis (SpA), Crohn's disease, Schnitzler's syndrome. About 10% only have clinical manifestations of AIDs after the age of 30 years. Surprisingly, fever of unknown origin (FUO) adult cohorts have demonstrated that the prevalence of adult-onset Still's disease (AOSD) corresponds to about 5% of all cases, constituting sometimes the most common rheumatologic disorder, while familial mediterranean fever (FMF) probably constitutes the second most prevalent AID. One study that included 266 adults with suspected AIDs identified 54 cases of NOD2-associated AIDs, 13 cases of FMF, 6 cases of tumor necrosis factor-receptor-associated periodic syndrome (TRAPS), 5 cases of cryopyrin associated periodic syndromes (CAPS) and 1 case of hyperimmunoglobulinemia D with periodic fever syndrome (HIDS).

***Keywords:*** Auto-inflammatory disorders; Familial mediterranean fever; Tumor necrosis factor-receptor-associated periodic syndrome; Cryopyrin associated periodic syndromes


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# CXCL9 and its receptor CXCR3: An important link between inflammation and cardiovascular risks in rheumatoid arthritis patients

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Cardiovascular disease (CVD) is the most common cause of mortality in rheumatoid arthritis (RA), and inflammation has a decisive role in its pathogenesis. CXCL9 contributes to multi aspects of inflammatory reactions associated with the pathogenesis of CVD. In the current study, we evaluated the association of plasma CXCL9 and CXCR3 gene expression with cardiovascular risk factors in RA patients for the first time.Thirty newly diagnosed, 30 on-treatment RA patients, and 30 healthy subjects were recruited in this study. The plasma concentration of CXCL9 and CXCR3 gene expression were measured using ELISA and real-time PCR, respectively. The CVD risk was evaluated using Framingham Risk Score (FRS) and Systematic Coronary Risk Evaluation (SCORE).The plasma levels of CXCL9 were significantly higher in the newly diagnosed and on-treatment RA patients compared to the control group ($P < 0.0001$ and $P < 0.001$, respectively). Also, the CXCR3 gene expression was strongly elevated in newly diagnosed and on-treatment patients ($P < 0.001$ and $P < 0.01$, respectively). The CXCL9 and CXCR3 were significantly associated with RA disease activity ($P = 0.0005$, r = 0.436; $P = 0.0002$, r = 0.463, respectively). The FRS was remarkably higher in newly diagnosed and on-treatment patients ($P = 0.014$ and $P = 0.035$, respectively). The CXCR3 gene expression significantly correlated with age, systolic blood pressure, FRS, and SCORE ($P = 0.020$, r = 0.298; $P = 0.006$, r = 0.346; $P = 0.006$, r = 0.349; $P = 0.007$, r = 0.341, respectively). The CXCL9 plasma concentration had a significant negative correlation with plasma HDL and LDL levels ($P = 0.033$, r = -0.275; $P = 0.021$, r = -0.296, respectively). CXCL9 and CXCR3 correlate with different variables of CVD in RA.

***Keywords:*** Rheumatoid arthritis; Cardiovascular disease; CXCL9; CXCR3


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# Expression pattern of glucocorticoid receptor a gene and associations with clinicolaboratory features in patients with systemic lupus erythematosus

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Glucocorticoid receptor α (GRα) gene is a transcription factor with clinically significant immune-modulating properties in various autoimmune diseases. The expression pattern of the GRα gene in SLE patients is controversial. This study aimed to assess the correlation between the GRα expression and different clinical and laboratory-related parameters in SLE patients.A total of 45 women with newly diagnosed SLE and 31 sex and age-matched healthy controls were enrolled in this cross-sectional study. The real-time quantitative PCR (qRT-PCT) method evaluated the differences in GRα expression in peripheral blood mononuclear cells from cases and controls. The correlation between the GRα gene expression levels, clinicolaboratory features, and potential prognostic application was also analyzed.Compared to the healthy individuals, the GRα gene expression in newly diagnosed SLE patients who did not receive any treatment was numerically reduced, but this reduction did not achieve statistical significance (P = 0.87). No significant correlation was also found with the activity and severity of SLE according to SLEDAI2K (P = 0.41). The GRα gene expression showed a negative correlation with CRP (P = 0.034) and a positive correlation with lupus anticoagulant (P = 0.039) levels in SLE. The receiver operating characteristic (ROC) curve analysis indicated that the GRα expression level might be a predictor biomarker for low CRP and positive lupus anticoagulant in SLE, respectively.This study proposed that expression of the GRα in newly diagnosed lupus patients has no statistically significant difference with healthy age and sex-matched controls. Besides, its expression does not correlate with lupus disease activity according to SLEDAI2k.

***Keywords:*** Systemic lupus erythematosus; GRα gene; CRP; Glucocorticoid gene receptor


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**Abstracts** **Open Access**

# Upregulation of MALAT1 expression and TGF-β serum levels can stratify rheumatoid arthritis patients

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Epigenetic alterations are associated with abnormal cytokine regulation in rheumatoid arthritis (RA). MALAT1 is a conserved long non-coding RNA (lncRNA), which has been shown to be upregulated in RA. Besides, MALAT1 is important in the control of the TGF-β signaling pathway. Therefore, it is hypothesized that MALAT1/TGF-β axis may be implicated in the progression of RA. The frequency of $CD4^+$ T cells, as well as MALAT1 mRNA expression and TGF-β levels in the peripheral blood (PB) and serum of RA patients and healthy controls (HCs) were evaluated. The frequency of $CD4^+$ T cells was assessed using the flow cytometry method. The serum concentration of TGF-β was measured by ELISA, and the mRNA expression of MALAT1 was evaluated by real-time PCR. Results showed an increased expression of MALAT1 ($P$ = 0.003) and TGF-β serum levels ($P$ < 0.001) in RA patients compared to the HCs. The MALAT1 expression was positively correlated with the serum levels of TGF-β in active RA patients ($r$ = 0.713, $P$ = 0.012). TGF-β serum levels had also significant correlations with $CD4^+$ T cells ($r$ = 0.364, $P$ = 0.040) and DAS28 ($r$ = 0.459, $P$ = 0.009). Also, TGF-β serum levels showed an AUC= 0.75 and MALAT1 showed an AUC = 0.6 in distinguishing active RA patients from inactive patients. TGF-β also showed an AUC value of 0.84 in distinguishing RA patients from HCs. Our results suggested the possible involvement of the MALAT1/TGF-β axis in the pathogenesis of RA. MALAT1 and TGF-β can also be promising biomarkers in discriminating RA patients from HCs.

***Keywords:*** Rheumatoid arthritis; MALT1; Cytokine; Epigenetic; TGF-β


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**Abstracts** **Open Access**

# The key role of very early diagnosis of rheumatic diseases in the first clinical features

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The goal of diagnosing and treating rheumatic diseases is to improve patient outcomes and quality of life. Early diagnosis is crucial for achieving this goal, as the time interval between symptom onset and diagnosis can significantly impact disease progression. The prognosis of rheumatic diseases is influenced by various factors, including the nature and behavior of the disease, the availability of treatment tools, and the timing of diagnosis and treatment initiation. Musculoskeletal complaints are a common reason for medical visits, and many rheumatic diseases can cause significant damage to vital organs. Despite significant advances in diagnosis and treatment, there is still a delay in diagnosis that threatens patient health. The use of classification and diagnostic criteria designed primarily for research purposes in clinical settings may contribute to this delay. To improve patient outcomes, there is a need to diagnose diseases at the onset of clinical symptoms or even earlier. Collaboration among colleagues is essential for achieving this goal. Key questions to consider include whether the timing of biopsy is ideal for achieving therapeutic goals in lupus patients, whether the diagnostic and treatment process for Takayasu's disease has a place in modern rheumatology, and whether significant changes in quality of life and control of scleroderma pathophysiology can be achieved after several months or years of delayed diagnosis. Stages of disease progression and steps of diagnosis are shown in Figure 1. In summary, early diagnosis is crucial for improving outcomes in rheumatic diseases. Collaboration among colleagues and a focus on diagnosing diseases at the onset of clinical symptoms or even earlier can help reduce disease complications.

***Keywords:*** Diagnosis; Rheumatic Diseases; First Clinical Features; Classification criteria; Diagnostic criteria


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# A comparative study of the effect of sulfasalazine and hydroxychloroquine on non-specific arthritis of the knee joint

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According to previous studies, some medicines such as sulfasalazine and hydroxychloroquine induce favorable results in patients with non-specific arthritis of the knee joint, so this study aimed to compare the effectiveness of these medicines in treatment of non-specific knee joint arthritis.In the study, total number of 70 patients with non-specific knee joint arthritis referred to shahid Sadoughi Hospital. One group of patients received hydroxychloroquine and another group, sulfasalazine. Pain severity and complete clinical response were collected from medical records.Mann-Whitneyand Wilcoxon test were used for analysis of data.The mean score of pain severity in hydroxychloroquine group before and after intervention was 6.08 and 3.02, respectively. Moreover, these changes (before and after intervention) in sulfasalazine group were 6.80 and 1.77 respectively. The decrease in both groups were statistically significant ($P < 0.05$). The complete clinical response was 14.2 percent in hydroxychloroquine group and 37.1 percent in sulfasalazine group which indicates that the patients in sulfasalazine group showed a higher level of complete clinical response than hydroxychloroquine group.Although both medications are effective in decrease of the pain in these patients, the sulfasalazine is more effective. No treatment complication reported in any of two groups which could be due to short treatment duration.

***Key words:*** Sulfasalazine; Hydroxychloroquine; Inflammatory arthritis; Knee arthritis


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# Transient elastography findings in patients with rheumatoid arthritis taking methotrexate: A comparative study

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Methotrexate is one of the widely used disease-modifying agent in rheumatic disease, including rheumatoid arthritis (RA), psoriasis, and inflammatory bowel diseases. However, concerns about the hepatotoxicity of methotrexate remains. This study aims to investigate the transient elastography findings of RA patients taking methotrexate. Fifty-eight patients with RA, with at least six months history of methotrexate usage included in the study. Patients with concomitant liver disease, chronic kidney or heart failure were excluded. Transient elastography (TE) findings were obtained using Fibroscan®. Data were compared with control group without history of rheumatic diseases. Mean elasticity score was 9.56 ± 2.44 kPa in patients and 8.86 ± 1.11 kPa in the control group (P = 0.043). Liver elasticity significantly was higher in patients with equal or more than ten years of RA (P = 0.005). Transient elastography results was not related with body mass index, duration or cumulative methotrexate dosage, or liver transaminase levels. Average daily sulfasalazine intake was negatively correlated liver stiffness index (P = 0.037, rho = -0.323). Findings showed a relationship between the duration of rheumatic disease and liver fibrosis. Liver fibrosis was more prevalent patients with more than ten years history of RA. Body mass index, liver transaminase level, cumulative methotrexate dosage was not correlated with live fibrosis.

***Keywords:*** Methotrexate; Hepatotoxicity; Transient elastography; Fibroscan; Rheumatoid arthriti


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# Inflammatory myositis coexisting with multiple myeloma in an Iranian male

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Multiple myeloma (MM) is a plasma cell neoplasm characterized by the infiltration of plasma cells into the bone marrow, often leading to substantial skeletal degradation characterized by osteolytic lesions, osteopenia, and possible pathological fractures. Accurate differentiation between MM and other plasma cell dyscrasias is crucial for appropriate treatment and prognosis. Inflammatory idiopathic myopathies, autoimmune disorders provoking muscle weakness and inflammation, are frequently linked with malignancies. Specific clinical manifestations and diagnostic assessments play a pivotal role in distinguishing between these conditions. A 55-year-old man with a medical history of gradually progressing weakness in both lower limbs and atypical symptoms sought admission to Shahid Sadoughi Hospital. Radiological assessments disclosed the presence of lytic lesions and inflammation-associated degeneration in adjacent muscles. Subsequent scrutiny through bone marrow aspiration and biopsy unveiled a 34% involvement of plasma cells in plasma cell dyscrasia. A muscle biopsy further corroborated the diagnosis of inflammatory muscle degeneration. The confluence of symmetrical muscle weakness, electromyography-nerve conduction velocity (EMG-NCV) outcomes, and muscle biopsy findings collectively prompted the diagnosis of inflammatory myositis. Moreover, additional diagnostic criteria were fulfilled, ultimately leading to a conclusive diagnosis of MM.Our study presented the first reported case of a coincident inflammatory myositis and MM in an Iranian patient. Nevertheless, the paraneoplastic nature of this manifestation could not be confirmed due to the patient's died during treatment.

***Keywords:*** Idiopathic inflammatory myopathies; Multiple myeloma; Polymyositis; Malignancy


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# Effect of alexandrite hair removal laser on the activity of systemic lupus erythematosus

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While ultraviolet light is a well-known environmental trigger of systemic lupus erythematosus (SLE), it is unknown whether other spectra of light including infrared could have an effect on SLE activity. The aim of this study was to evaluate the effect of laser hair removal which emit red and infrared light, on the activity of SLE.Twenty patients with SLE were enrolled. Six monthly sessions of hair removal laser with alexandrite laser were done. Demographical and clinical data were recorded. SLE disease activity index (SLEDAI-2K), serum levels of anti-ds-DNA, C3, C4, and CH50 complement levels, and white blood cell (WBC) and platelet counts were measured before and after the laser course to investigate and compare the activity of SLE. Most of the participants were female (90%) with a mean age of 32.65. Prednisolone was the most commonly used medication (95%) followed by hydroxychloroquine (90%). The most common skin types according to Fitzpatrick's classification were type II and III. We found no significant differences between the SLEDAI-2K score, serum level of anti-ds-DNA, C4, and C3 before and after the hair removal laser. The WBC and platelet count did not change after the laser.Hair removal laser is safe, has no effect on the activity of SLE, and might not induce disease exacerbation.

***Keywords:*** Systemic lupus erythematosus; Hair removal; Alexandrite laser; Disease activity


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# Fractional carbon dioxide laser for treatment of microstomia and perioral rhytids in systemic sclerosis patients

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Systemic sclerosis (SSc) is an autoimmune disorder characterized by skin fibrosis leading to skin tightening and disfigurement which affects a patient's life quality significantly. Yet there is no definite treatment for SSc, and its skin complications. Fractional carbon dioxide laser has been widely used for different cutaneous pathologies. The aim of this study is to evaluate the benefits of CO2 laser resurfacing on microstomia and perioral rhytids in systemic sclerosis patients. Thirty-three systemic sclerosis patients were enrolled. Four sessions of CO2 laser treatment were performed at an interval of four weeks. Patients were evaluated monthly. The interincisal distance (IID) measurement was used to evaluate maximal mouth opening capacity, and the mouth handicap in systemic sclerosis (MHISS) scale was used to assess the improvement after treatment. All of the participants were female with a mean age of 47.46 and a standard deviation of 7.11. The mean disease duration was 12.35. The mean total core of the MHISS scale was 25.24, and the mean IID was 48.11 millimeters before the treatment with CO2 laser. The MHISS score decreased to 18.29 (P-value = 0.01), and patient satisfaction increased (P-value = 0.001) after treatment. But, observed differences in the results of IID were not statistically significant.In conclusion, it seems that the fractional carbon dioxide laser is effective in the improvement of perioral rhytids, limitation in mouth opening, and mouth disability in SSc patients.

***Keywords:*** Fractional CO2 laser; Systemic sclerosis; Microstomia; Perioral rhytids


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# Investigating the occurrence rate of avascular necrosis in patients with Covid-19 infection from 2020 to 2022

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During the covid-19 epidemic, due to the effect of corticosteroids in reducing the exacerbation of SARS-Covid-19, the use of this drug increased significantly. Considering that one of the important side effects of this drug is avascular necrosis (AVN), it is necessary we investigate the cases of AVN during the epidemic of Covid-19. This case series study was conducted in 2023 that by referring to the reported MRI files had taken during the process of the Covid-19 pandemic, AVN cases were separated and also demographic information of the patients and the information related to corticosteroid consumption, including the amount, type, duration of its use recorded. The patient's disease and clinical symptoms were extracted. Finally, it was analyzed using SPSS 22 software.The findings of the study showed that among 29 people with AVN, 11 people (37.9%) had been infected with Covid-19 before getting AVN and 7 patients were male and 4 were female. The average age of these patients was 43.9 year. Ten of these patients were treated with corticosteroids. The average corticosteroid dose was 891.45 mg and the average number of days of Covid-19 infection until the onset of AVN was about 103 days. Based on the findings of this study, the Covid-19 disease and corticosteroid treatment to treat the disease is associated with the occurrence of AVN. Corticosteroid dose is lower compared to AVN without Covid-19 infection.

***Keywords:*** Avascular Necrosis; Covid-19; Corticosteroids; Glucocorticoids


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**Abstracts** **Open Access**

# The effectiveness of relaxation and cessation program on stress, anxiety and depression in patients with systemic lupus erythematosus, referred to the rheumatology clinic of Rafsanjan University of Medical Sciences in 1399

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Psychological problems are one of the important prognostic factors in chronic diseases and the physical and mental well-being of sufferers. The present study was conducted with the aim of determining the effectiveness of the relaxation and thought-stopping program on stress, anxiety and depression in patients with systemic lupus erythematosus (SLE). The research was of semi-experimental type with pre-test, post-test, along with the control group. The sample consisted of 40 lupus patients referred to the rheumatology clinic of Rafsanjan city in 2019, who were randomly selected and placed in two experimental and control groups. The experimental group underwent 8 treatment sessions of relaxation and thought stopping program. The control group did not receive psychological intervention. Data were collected with the depression, anxiety and stress scale (DASS-21) and analyzed using Kolmogorov-Smirnov, chi-square, independent t and paired t tests.In the intervention group, stress scores decreased significantly after the intervention ($P = 0.014$). There was no significant difference between the anxiety scores of the intervention group and the control group in the pre-test and post-test ($P > 0.05$) stages. There was no significant difference between the depression scores of the intervention group and the control group in the pre-test ($P = 0.554$) and post-test stages ($P = 0.058$), but in the intervention group, the depression scores decreased significantly after the relaxation and thought-stopping program was taught ($P = 0.002$). The relaxation and thought stopping program can be effective in reducing stress and reducing depression in patients with SLE.

***Keywords:*** Relaxation; Cessation program; Stress; Anxiety; Depression; Systemic lupus erythematosus


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# Examining the frequency of inconsistency of bone density in spine and femur regions by DXA method and some factors related to it in patients referred to densitometry center of Rafsanjan city

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Checking bone density in at least two places is necessary to diagnose osteoporosis. The present study was conducted with the aim of investigating the inconsistency of bone densitometry of lumbar and femur regions with DXA method and some effective factors.In this study, 1270 clients of the bone density measurement center in Rafsanjan were examined. The inclusion criteria for the study included being at least 20 years old and having one of the risk factors of osteoporosis. Bone density was measured in the area of femur and L1-L4 vertebrae by DXA method. According to the T-score index, a value less than -2.5 was considered as osteoporosis and -1 to -2.5 as osteopenia. The results of the collected data were analyzed using SPSS22 statistical software and a significance level of 0.05.83.5% of the participants were women and 46.9% were in the age group of 65-50 years. Based on T-score, 48.6% were in agreement, 44.5% were mild discordance, and 6.9% (88 cases) were severe discordance, and based on Z-score, 60% were in agreement, 37.5% had mild discordance and 2.5% had severe discordance. According to the results of the proportional odds model, gender, age group, tea consumption, place of residence and physical activity significantly change the odds of mismatching the results.It is necessary for doctors to expect that inconsistency between T-score and Z-score results in the spine and femur will be observed in about half of the people.

***Keywords:*** Osteoporosis; Densitometry; Femur bone; Waist


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# Evaluating the frequency of some cardiovascular risk factors in patients with lupus referred to Rafsanjan Rheumatology Clinic in 2022

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Systemic lupus erythematosus (SLE) may involve the cardiovascular system and cardiovascular involvement has been reported in 60% of SLE patients. This study aimed to evaluating the frequency of some cardiovascular risk factors in patients with SLE referred to Rafsanjan Rheumatology Clinic in 2022. This cross-sectional study included 192 SLE patients. The demographic, anthropometric, and disease-related data of the patients, including age, sex, body mass index (BMI), etc. were recorded. Cardiovascular risk factors, such as diabetes, hypertension, dyslipidemia, history of myocardial infarction, etc. were evaluated. SLE disease activity was assessed using the systemic lupus erythematosus disease activity index (SLEDAI). A history of CABG, congestive heart failure, and ischemic heart disease existed in 2 (1%), 13 (6.8%), and 1 (0.5%), respectively. Dyslipidemia was seen in 61 (31.8%), diabetes in 15 (7.8%), and hypertension in 36 (18.8%). Based on BMI, 81 patients (42.2%) were overweight and 65 (33.9%) were obese. As for CVD status, 74 (38.5%) patients did not have neither risk factors nor established disease, 103 (53.6%) only had risk factors, and 15 (8.7%) has established CVD or history of stroke. Based on the results of this study, older age, higher BMI, illiteracy, low physical activity, family history of CVD, smoking, dyslipidemia, diabetes, hypertension, SLEDAI score, and taking methotrexate were significantly correlated with a worse CVD status in SLE patients of the current study.

***Keywords***: Systemic lupus erythematosus; Cardiovascular risk factors; Cardiovascular disease; Disease activity


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# Examination of bone mass density by DXA method and some factors related to it in patients with rheumatoid arthritis referred to the rheumatology clinic of Rafsanjan city in 1400

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Rheumatoid arthritis (RA) can affect bone density. The present study aims to investigate the bone mineral density (BMD) by measuring the amount of dual-energy x-ray absorptiometry (DXA) in RA patients.The present cross-sectional study was conducted on 415 RA patients at Rafsanjan Rheumatology Clinic. The patients were included in the study by census based on the inclusion criteria, including diagnosis of RA by a physician according to the criteria of American College of Rheumatology/European League against Rheumatism (ACR/EULAR), at least three months history of the disease, and age of 35-70 years. The BMD was measured by the DXA method in both hip and spine and the RA severity was measured using disease activity score-28 (DAS-28) index.The mean age of RA patients was 56.49 ± 11.73 years and 86.7% (300 people) were female. Based on hip bone density, the frequency of osteoporosis was 7.5% (26 people) and osteopenia was 43.6% (151 people), and based on spine, it was 33% (137 people) and 38.1% (158 people), respectively. The probability of developing osteopenia or osteoporosis based on hip and spine bone density increased by increasing age, fracture history and DAS-28 score.Based on the results of the study in RA patients, increasing age, history of bone fracture, and DAS-28 score increases the probability of osteopenia or osteoporosis. Therefore, it is suggested to pay attention to the mentioned factors in order to prevent complications in these patients.

***Keywords:*** Rheumatoid arthritis; Osteoporosis; Osteopenia; Bone Density


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**Abstracts** **Open Access**

# Prevalence of work-related musculoskeletal disorders among the Ali Ibn Abi Talib Hospital's staff in Rafsanjan city in 1398

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One of the problems of employees in different occupations, especially employees in different wards of the hospital, is work-related musculoskeletal disorders (WMSDs). Therefore, considering the importance of this issue and staff health, evaluating the prevalence of WMSDs and related factors among staff is important. In this study, we evaluated the prevalence of WMSDs among the Ali Ibn Abi Talib Hospital's staff in Rafsanjan city in 1398.In this study, 220 staff members (143 females and 77 males) entered the study in 1398 with personal consent and to collect data, the demographic information questionnaire and Nordic Musculoskeletal Questionnaire was used.The mean age of staff was 35.43 ± 8.08 including treatment staff (nurses-physicians) (46.8%,) administrative staff (33.6%) and service staff (drivers-workers) (19.6%). Also, the most WMSDs were related to the neck area with 40%, knees with 38%, waist with 36% and the lowest related to elbows, foot and ankles with 12%, thighs with 16% and back with 24.1%, respectively. In this study, the prevalence of disorders in some areas such as the neck was high as in some studies. Therefore, it seems that the necessary planning should be done to prevent further occurrence of these disorders among hospital staff, which may lead to inefficiency.

***Keywords:*** Musculoskeletal disorders; Hospital staff; Rafsanjan; Work-related musculoskeletal disorders (WMSDs)


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**Review Article** **Open Access**

# A rare case of Wilson's disease initially suspected to systemic lupus erythematosus

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The present report describes a case of a young woman who was initially suspected to have systemic lupus erythematosus (SLE) but was later diagnosed with Wilson disease (WD). To diagnose the patient, she underwent liver sonography, Brain magnetic resonance imaging (MRI), liver biopsy, liver and urine copper measurements. A 19-year-old female was referred to Ghaem Hospital, Mashhad University of Medical Sciences, with complaints of asthenia, and pancytopenia along with high liver function tests and erythrocyte sedimentation rate (ESR). Due to pancytopenia, low complement levels, a positive antinuclear antibody (ANA), positive SSA Ab (anti-RO) and elevated IgG, she was suspected of having SLE and treated with corticosteroids but did not respond. Based on hepatomegaly and abnormal prothrombin time (PT) she was suspected to have a liver disease. Considering disordered INR, hepatomegaly and splenomegaly, she was referred for liver biopsy and was diagnosed with WD. Doppler sonography of portal vein and upper GI endoscopy for cirrhosis were normal. The urine copper level had increased up to 168 µg/while ceruloplasmin levels had decreased to 157 µg/dl and liver copper increased to 260µg/dl. However, Kayser–Fleischer rings were negative. Finally, she was improved with Trientine and zinc sulfate. It is important to note that the presence of hepatomegaly and abnormal INR is uncommon in SLE. Therefore, in clinical practice, differential diagnosis of WD and SLE is necessary for patients with hepatic and hematologic manifestations.

***Keywords:*** *Hepatomegaly, Systemic lupus erythematosus, Wilson's disease*



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