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Background: Patients with the rheumatoid arthritis (RA) have an increased risk of cardiovascular disease (CVD) compared to general population. However there are insufficient modality to predict future CVD risk in RA.

Objectives: This study assessed whether splenic and arterial activity measured by positron emission tomography/ computed tomography (PET/CT) predict the risk of CVD thrombosis events beyond conventional risk factors in patients with RA.

Methods: We enrolled 84 patients with active RA who underwent fluorine-18-fluorodeoxyglucose (FDG) PET/CT and disease activity evaluation at the same time. CVD thrombosis events were independently evaluated, while blinded to activity of PET/CT, during follow up periods. FDG uptake by nuclear medicine physician was examined in the spleen and ascending aorta and blood pool activity of superior vena cava as SUV (standardized uptake values) and target-to-background-ratio (TBR) while blinded to CVD events.

Results: During follow-up periods, 19 patients developed CVD thrombosis events. Both splenic and arterial TBR were significantly increased in patients with subsequent CVD events compared to in patients without (2.19 ± 0.60 vs 1.80 ± 0.34 , $p < 0.013$, 1.72 ± 0.22 vs 1.57 ± 0.22 , $p < 0.012$). Splenic TBR was associated with an increased risk of CVD events after adjustment for conventional CVD risk factors [hazard ratio (HR): 3.15; 95% confidence interval (CI): 1.46 to 6.79; $p = 0.003$]. Moreover, the association between splenic TBR and CVD events remained significant after adjustment for disease activity (HR: 3.00; CI: 1.36 to 6.63; $p = 0.007$) and after adjustment for arterial TBR (HR: 3.00; CI: 1.36 to 6.63; $p = 0.007$).

Conclusion: Our results show splenic metabolic uptake in FDG-PET/CT in patients with RA provide information for subsequent CVD events beyond conventional risk factors.

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POS0097

JOINT INFLAMMATION TENDS TO RECUR IN THE SAME JOINTS DURING THE RHEUMATOID ARTHRITIS DISEASE COURSE

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Background: It is unknown whether in the disease course of rheumatoid arthritis (RA), inflammation recurs in the same joints over time or is more variable in joint locations. Joint involvement patterns over time might provide clues about the underlying mechanisms causing local joint inflammation.

Objectives: The aim of this study is to assess if local joint inflammation at presentation of RA tends to recur or persist in the same joints.

Methods: Data from the BeSt study were used, a treat-to-target (DAS ≤ 2.4) trial in newly diagnosed RA (ACR 1987 criteria) patients. During 10 years, for each patient 68 joints were assessed three-monthly (41 visits) by trained nurses for swelling (yes/no) and tenderness.

We analyzed the association between local joint swelling at baseline and later swelling of the same joint using a multilevel mixed-effects logistic regression model. Models were adjusted for joint location and for timepoint, with joints clustered within patients. A sensitivity analysis was done for the 25% most affected joints (MCP 1-3, PIP 2-3, wrists and MTP 2-4).

To investigate whether later swelling of a joint is predicted by baseline swelling of that same joint specifically, rather than by baseline swelling in general, a permutation test with 1000 permutations was performed. A p-value < 0.05 indicates that joint swelling is better predicted by its baseline swelling than by baseline swelling of randomly selected other joints.

In a separate model, with an interaction term between baseline swelling and previous visit swelling (yes/no), we evaluated if the association between baseline swelling and later local swelling was influenced by whether later swelling was persistent (swelling at both the current and previous visit) or recurrent (swelling at current visit but not at the previous visit).

Results: The 508 patients had a median (IQR) follow-up duration of 10 (6-10) years. At baseline, 8,137/34,423 (24%) assessed joints were scored as swollen. Baseline swelling was subsequently persistent in 21% of the joints with a median (IQR) duration of 1 (1-2) visit (± 3 months after baseline). In addition, after resolution of initial swelling, swelling recurred at least once in 46% of the joints with baseline swelling. Baseline swelling was significantly associated with swelling in the same joint during follow-up (OR 2.37, 95% CI 2.30-2.43). A sensitivity analysis of the most affected joints showed similar results (OR 2.10 [95% CI 2.03-2.19]).

The permutation test showed a significant result with $p < 0.001$, indicating that joint swelling is better predicted by baseline swelling of that same joint than by baseline swelling of other joints.

The association between baseline swelling and later local swelling was weaker in case of persistent swelling than in case of recurrent swelling (interaction term baseline swelling * swelling at previous timepoint 'yes': OR 0.80 [95% CI 0.75-0.85]).

Conclusion: In newly diagnosed RA, over median 10 years of treatment to target DAS ≤ 2.4 , baseline swelling persisted in 21% of the joints, for median 3 months after baseline. Local recurrence after initial resolution occurred in 46% of the joints. Baseline joint swelling was significantly associated with local joint swelling during follow-up, even when taking into account the higher a priori chance of swelling in the joints that are most often affected, and joint swelling during follow-up was better predicted by baseline swelling of that particular joint than by baseline swelling of other joints. Local persistence and recurrence of joint swelling despite DAS ≤ 2.4 steered treatment adjustments suggest that local joint conditions or even joint memory play a role in mechanisms of joint inflammation.

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POS0098

THE INFLUENCE OF THE ACTIVITY OF RHEUMATOID ARTHRITIS TO INFECTIOUS AND WOUND COMPLICATIONS AFTER TOTAL HIP AND KNEE ARTHROPLASTY

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Background: Surgical treatment of patients with rheumatoid arthritis (RA) is associated with an increased risk of complications. This is due to the presence of inflammation, many variants of the disease, reduced physical activity, severity of functional disorders, prolonged therapy with glucocorticoids, disease-modifying antirheumatic drugs (DMARDs) and biological DMARDs, osteoporosis, as well as activity of the underlying disease.

Objectives: to conduct a comparative analysis of the influence of RA activity levels on infectious complications (periprosthetic infection) and wound complications (poor healing, divergence, necrosis of the wound edges) after hip and knee arthroplasty in RA patients.

Methods: 1113 arthroplasties were analyzed in patients with RA, which were performed between 2002 and 2019. Of these, 649 total knee arthroplasties and 464 total hip arthroplasties were performed.

Results: Infectious complications after total hip and knee arthroplasty did not occur at 0 grade of disease activity (remission). At the I grade of activity, periprosthetic infections were detected with a frequency of 0.31%, at the II grade – 0.89%, and at the III level in 3.06% of cases.

Complications from the operative wound occurred in 0.91% of cases with I grade of activity, at II grade with a frequency of 5.68%, and at III – 6.98%. There were no cases of complications from the wound in patients with remission of RA.

Statistical analysis of the obtained data revealed a significantly higher number of complications in the group of RA patients ($p < 0.005$). During analyzing each type of complication, significant differences were also obtained ($p < 0.005$).

Conclusion: Risk of periprosthetic infection and complications from the wound is several times higher in patients with a high grade of RA activity. This means that performing arthroplasty, as well as other operations, in patients with high RA activity correlates to a high risk of complications.

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POS0099

CLINICAL REMISSION IN RHEUMATOID ARTHRITIS PATIENTS TREATED WITH TOFACITINIB IS ASSOCIATED WITH LOW BASELINE EXPRESSION OF GENES RELATED TO ENERGY METABOLISM AND WITH CELLULAR CAPACITY OF THEIR UPREGULATION DURING FOLLOW-UP

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