

specificity of MRI-detected inflammation increased from 22% to 56% in CSA-patients, and from 10% to 36% in UA-patients. The sensitivity was not affected; it was 88% and 85% in CSA-patients and 93% and 93% in UA-patients. The accuracy also increased, from 32% to 60% in CSA-patients and 22% to 44% in UA-patients.

Conclusions: The use of a reference population resulted in a substantial reduction of false-positive results, without affecting the sensitivity. This is of high importance because of the potential risks of false-positive MRI-results, for example in the setting of UA as a positive MRI-result may influence the decision to initiate disease modifying medication. Although a reference population is generally used in medicine for other tests to derive a definition of a positive test result, this is the first study demonstrating the value of a reference population to define a "positive MRI".

Disclosure of Interest: None declared

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Rehabilitation

THU0705 EXPERIMENTAL USE OF 3D PRINTING TECHNOLOGY FOR THE CONSTRUCTION OF DEVICES AS INTEGRATION OF OCCUPATIONAL THERAPY INTERVENTION WITH RHEUMATOID ARTHRITIS PATIENTS (RA)

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Background: RA is a chronic inflammatory disease that can interfere with the ability to perform activities of daily living. The adoption of aid devices allows to maintain and/or improve employment performance, reducing the pain preventing further joint damage. However, it is known that the abandonment rate of such devices is quite high, resulting in failure of the rehabilitation project, and waste of resources. The reasons people give for abandoning support technology are that they have not been involved in the process of provision, and that the devices do not have the intended effect (1).

Objectives: technology may allow customization of 3D printing devices agreed together with patients, utilizing materials which are cheap, fast and easily adjustable.

Methods: The study was organized into the following phases: recruitment of RA patients for the "joint protection laboratories"; sessions of the "joint protection laboratories"; recruitment of patients for the identification of needs for customized aid devices; co-design of customized aid devices; printing of customized aid devices; delivery of customized aid devices; detection using customized aid devices.

We have collected a list of needs to be able to develop such customized aid devices at the end of a course to educate on joint protection covering: ergonomic gestures, management of fatigue and pain, environmental adaptations and aid devices.

18 patients (17 women and 1 man), age between 30 and 75 years old, were organized into small groups for the "joint protection laboratories". 9 patients expressed their specific needs regarding the aid devices and therefore subsequent meetings were organized that have allowed us to produce and deliver customized objects.

Autodesk® Fusion360 for object modeling; Ultimaker Care for slicing; 3D printing DeltaWASP 20 40. For the collection of the design features we used the PA board (product analysis) of the USERfit tool. For the psycho-social impact assessment of the assistance, the PIADS (Psychosocial Impact of Assistive Devices Scale – scale -3+3) was used, and for the evaluation of the patient's satisfaction with respect to the aid device, QUEST (Quebec User Evaluation of Satisfaction with Technical Aids, scale 1–5) was used.

Results: 6 aid devices were customized: hand grip holder for chalk, toothbrush, ignition key, tablespoon, iron, as well as a handle to open the moka coffee machine.

The psychosocial assessment of 6 delivered aid devices, collected through PIADS, showed an overall positive outcome (mean competence +1.488; adaptability: +1.690; self-esteem: +1.375). The assessment of patient satisfaction through QUEST, was good overall (scale 1–5: satisfaction aid: 4.75; service satisfaction: 4.68).

Conclusions: This work also demonstrated, over a range of small numbers, that the path of co-design and production of customized aid devices via rapid manufacturing with 3D printing technology is feasible and fulfilling.

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THU0706 LOW DISEASE ACTIVITY AFTER A SHORT COURSE OF DRUG THERAPY AND REHABILITATION IS ASSOCIATED TO A GREATER IMPROVEMENT IN FUNCTIONAL CAPACITY IN RHEUMATOID ARTHRITIS

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Background: Patients with rheumatoid arthritis (RA) have lower functional capacity than general population (1). Studies have shown that patients are able to improve their functional capacity after adequate treatment with disease-modifying antirheumatic drugs (DMARDs) (1–2), but it is unclear which other factors are involved in rehabilitation settings.

Objectives: To investigate which clinical factors are associated to improvement in functional capacity in patients with RA in the context of DMARD therapy and rehabilitation.

Methods: It was a case-control study. Patients with RA admitted between June 2014 and July 2016 were included. Assessments were carried out just before and after completion of rehabilitation program. Functional capacity was assessed with Health Assessment Questionnaire-Disability Index (HAQ-DI). Disease activity was evaluated with Clinical Disease Activity Index (CDAI). It was allowed to change DMARD treatment or dose during the follow-up period. Interventions were carried out at the discretion of the rehabilitation team and could include joint injections, exercises, orthoses, insoles, educational interventions and assistive devices. Patients that were operated in the follow-up period were excluded.

An improvement in HAQ-DI was defined as a difference of -0.22 . Patients that improved after treatment were compared with those who did not, regarding clinical characteristics and modalities of treatment that were employed. Chi-square or Fisher exact test analyses were employed.

Results: Forty-six women and two men were included, with average age of 56 (11) years old and 10,8 years of diagnosis, Rheumatoid factor was positive in 58% (mean titre 242,3 U/L); anti-CCP was positive in 48% (mean titre 283,8 U/L). Patients were followed for 6–12 months.

HAQ-DI improved 0,51 (0,3–0,71; $p < 0,001$) and CDAI improved 12,8 (7,6–17,9). Patients who were able to improve HAQ-DI had a better average CDAI in the second assessment (16 vs. 7, $p = 0,011$). There was no association between improvement of HAQ-DI and other clinical and laboratorial variables, including drug and rehabilitation modalities.

Conclusions: Low disease activity after a short course of drug therapy and rehabilitation is related to a greater improvement of functional capacity in patients with RA. Therefore, patients with RA may have better outcomes in rehabilitation if disease activity is controlled.

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[2] Norton S, Fu B, Scott DL, Deighton C, Symmons DP, Wailoo AJ, Tosh J, Lunt M, Davies R, Young A, Verstappen SM. Health Assessment Questionnaire disability progression in early rheumatoid arthritis: systematic review and analysis of two inception cohorts. *Semin Arthritis Rheum.* 2014 Oct;44(2):131–44.

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THU0707 RACE & REHABILITATION DESTINATION AFTER TOTAL HIP REPLACEMENT

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Background: There are marked racial/ethnic disparities in the utilization of hip joint replacement in the US. Differences in post-surgical rehabilitation care may influence this disparity. There is relatively little research on racial variations in post-hip joint replacement surgery care processes.

Objectives: The main objective of this analysis was to examine racial differences in where patients go for post-acute care rehabilitation after elective hip replacement surgery. We also assessed whether or not where patients go for post-surgery rehabilitation care impacts quality of care markers such as 90-day hospital readmission.

Methods: A retrospective, large regional dataset analysis using the Pennsylvania Health Care Cost Containment Council database was performed. Patients who underwent elective hip replacement surgery and discharged from Pennsylvania hospitals between fiscal years 2008–2012 were selected. Post-surgery rehabilitation destinations options included: home with self-care, home with home health (HH) care; skilled nursing facility (SNF) and in-patient rehab facility (IRF).

We used multinomial logistic regression models to estimate unadjusted and adjusted relative risk ratios (aRRRs) of being discharged home with HH care, to a SNF or to an IRF (vs. home with self-care) after surgery, comparing African-American (AA) to white patients. Multivariable models adjusted for patient-level and facility-level variables associated ($p < 0.10$) with post-surgical discharge destination based on bivariate analyses. Unadjusted and adjusted odds ratios (aORs) of 90-day hospital readmission were estimated using binary logistic regression models. Multivariable models adjusted for patient-level and facility-level variables associated