Figure 1. Distribution of indications for cesarean section

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AB0844 HAND GRIP STRENGTH EVALUATION IN RHEUMATOLOGIC DISEASES

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Background: Handgrip muscle strength test describes the strength of the hand muscles used to grasp or grip. Currently, hand grip evaluation is often used in clinical practice, as a marker of function and disability. In fact, it has already been applied as an outcome measure in arthritis rheumatoid clinical trials, to demonstrate the benefits of several treatments [1]. However, hand disability should also be considered in all other rheumatological diseases.

Objectives: The main aim of this study is to assess the handgrip muscle strength test in a rheumatological cohort of patients as compared to a control group.

Methods: This is a cross-sectional pilot study. We considered eligible 35 rheumatological consecutive female patients followed at our outpatients' clinic of Internal Medicine (I Policlinico of Naples) and 35 healthy control females (HC). Both groups included only right-handed individuals. Rheumatological patients were distributed as follows: 5 rheumatoid arthritis (14,3%), 9 psoriatic arthritis (25,7%), 4 systemic lupus erythematosus (11,4%), 10 systemic sclerosis (28,6%), 4 fibromyalgia (11,4%), 3 juvenile idiopathic arthritis (8,6%). The course of disease was under optimal treatment in all patients.

The type of hand grip used is the power grip, in which an object is held firmly by wrapping the fingers around it, pressing the object against the palm, and using the thumb to apply counter-pressure. We considered as either right or left hand valid measure the mean of three consecutive tests per arm. Between-groups differences were tested both by a uni- and multivariable analysis.

Results: The two subgroups were homogeneously distributed for age (median age 42 yrs. [IQR 33-48] vs. 36 yrs. [IQR 30-52] in HC; $p=0.902$). At univariate analysis, hand grip strength was significantly lower in the rheumatological patients, both at right hand (right 19.5 kg [IQR 13.6-24.8] vs. 24.5 kg [IQR 20.8-29] in HC; $p=0.004$) and left hand (18.5 kg [IQR 13.9-22.5] vs. 23.7 kg [IQR 19-27.3] in HC; $p=0.002$), as compared to HC. This finding was further confirmed at multivariable analysis only as for the left hand (OR 0.919, 95%CI: 0.858-0.984; $p=0.016$).

Conclusion: Rheumatological diseases are burdened by hand disability, mostly affecting daily activities performance [2,3]. Beyond an optimal disease control, our pilot study shows a decrease in left hand strength as compared to healthy controls. This might be due to a reduced use of the non-dominant hand, which may lead over time to a higher deficit of strength. As such, these patients should be prescribed to a left hand exercise to improve both mobility and strength and, consequently, hand function.

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AB0845 THE COMBINATION OF PLASMA FIBRINOGEN CONCENTRATION AND NEUTROPHIL-LYMPHOCYTE RATIO (F-NLR) AS A NOVEL INFLAMMATORY MARKER OF RHEUMATOID ARTHRITIS

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Background: The combined index of fibrinogen and neutrophil-lymphocyte ratio (F-NLR) has recently been reported as a new predictive factor in patients with cancer. However, the fibrinogen and NLR have not been simultaneously evaluated in rheumatoid arthritis (RA).

Objectives: This study aimed to explore the clinical value of F-NLR in RA and its relationship with disease activity.

Methods: This retrospective study collected 143 RA patients and 82 age- and gender-matched healthy controls. Neutrophil, lymphocyte, monocyte, platelet, fibrinogen, NLR, monocyte to lymphocyte ratio (MLR), platelet to lymphocyte ratio (PLR), C-reactive protein (CRP), erythrocyte sedimentation rate (ESR), Disease Activity Score of 28 joints-ESR (DAS28-ESR) and other laboratory parameters were recorded. Receiver operating characteristic (ROC) curves were used to define the optimization cut-off values of fibrinogen and NLR, which were 3.9g/L and 2.42. The F-NLR score was 2 for patients with high fibrinogen ($> 3.9\text{g/L}$) and elevated NLR (> 2.42), while those with one or neither were indexed as 1 or 0. The correlations between F-NLR as well as other inflammatory indexes and DAS28-ESR were measured.

Results: The F-NLR score was higher in RA patients than that in healthy individuals ($P < 0.05$). The proportion of higher F-NLR score increased significantly along with the disease activity ($P < 0.05$). According to the ROC curve which was conducted to discriminate RA patients from healthy subjects, the area under curve (AUC) of F-NLR (0.803, 95% CI: 0.744 - 0.861) was higher than that of fibrinogen (0.735, 95% CI: 0.670 - 0.801), NLR (0.724, 95% CI: 0.655 - 0.794), MLR (0.687, 95% CI: 0.615 - 0.759) and PLR (0.732, 95% CI: 0.664 - 0.800). Furthermore, F-NLR was more strongly associated with DAS28-ESR ($r = 0.572$, $P < 0.001$) when compared with fibrinogen ($r = 0.518$, $P < 0.001$), NLR ($r = 0.365$, $P < 0.001$), MLR ($r = 0.140$, $P = 0.096$), PLR ($r = 0.239$, $P = 0.004$), CRP ($r = 0.539$, $P < 0.001$) and ESR ($r = 0.487$, $P < 0.001$).

Conclusion: The results demonstrated that the F-NLR score was elevated in RA patients. The F-NLR score may be a potential marker to monitor the disease activity of RA patients.

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Education

AB0846 CONCEPTION AND FEASIBILITY OF A DIGITAL TELEGUIDED ABDOMEN, THORAX AND THYROID GLAND ULTRASOUND COURSE FOR MEDICAL STUDENTS

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Background: Over the past few decades, technological advances in both ultrasound (US) and the application of telemedicine have been made [1]. Medical education has shifted to online classes during the COVID-19 pandemic, creating challenges in adequate training of US.

Objectives: In the context of the current COVID-19 pandemic and the discontinuation of traditional classroom teaching, a tele-didactic US course for undergraduate medical students was developed. This study is examining the educational outcome of a new digital US course of the abdomen, thorax and the thyroid gland with the implementation of a modern portable US system.

Methods: A tele-guided US course was established between April 1st and June 20th, 2020, at the University Hospital in Bonn, Germany. Students completed pre- and post-course surveys and underwent six US organ modules. Each module took place in a flipped-classroom concept including a digital learning platform. An objective structured assessment of US skills (OSAUS) [2] was implemented as final exam. Further, US images of the course and exam were rated by the Brightness Mode Quality Ultrasound Imaging Examination Technique (B-QUIET) [3]. Achieved points in image rating were compared to the OSAUS exam and survey results.

Results: A total of 15 medical students were enrolled. There was a significant increase in self-assessed theoretical and practical ability ($p < 0.001$). Students achieved an average score of 154.5 (SD $\pm$ 11.72) out of 175 points (88.29%) in OSAUS, which corresponded to the image rating using B-QUIET and self-assessment data obtained in surveys. Interrater analysis of US images showed a favorable agreement with an ICC (2,1) of 0.895 (95% confidence interval 0.858 < ICC < 0.924).

Conclusion: US training via teleguidance should be considered in medical education. Our pilot study demonstrates the feasibility of this concept that can be used in the future to improve US training of medical students even during a pandemic. The digital implementation with an affordable, portable point-of-care-US device could be an incredible opportunity to expedite US training worldwide.

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Figure 1. Implementation of the digital ultrasound course concept

Classroom setting is displayed, demonstrating simultaneous screen transmission of ultrasound (US) and camera images. A: The peer tutor's camera image is shared with the students while demonstrating the US examination, B: At the same time the tutor's mobile phone screen is shared with the students in order to visualize the US image acquisition, C: Students performing the US examination on their own, D: Example of a worksheet, which had to be completed within the app and was stored along with the US images in the cloud

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AB0847

ESTABLISHMENT AND VALIDATION OF A DIDACTIC MUSCULOSKELETAL ULTRASOUND COURSE FOR DERMATOLOGISTS USING AN INNOVATIVE HANDHELD ULTRASOUND SYSTEM – THE MUDE STUDY (MUSCULOSKELETAL ULTRASOUND IN DERMATOLOGY)

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Background: In the early detection of arthritis, such as psoriatic arthritis (PsA), ultrasound (US) of painful joints plays an important role in diagnosis. Pathological findings can be missed during clinical examination, especially if conducted by physicians who are not trained. Furthermore, several publications undermine the importance of early PsA detection in psoriasis patients and the key role of the dermatologists in this process.

Objectives: The objective of this study was to examine a pilot musculoskeletal ultrasound (MSUS) course designed specifically for dermatologists.

Methods: To assess the degree of US expertise of the participants, a questionnaire was conducted before the course. The course concept, based on The German Society for Ultrasound in Medicine (Deutsche Gesellschaft für Ultraschall in der Medizin, DEGUM) covering only the most important US sections of all joints and focused on the detection of joint effusion and hyperperfusion. The course consisted of three modules and was carried out over 6 months. Figure 1 shows the modular course concept. A portable US device in combination with a tablet was provided to enable practice between the courses. The final teaching evaluation was carried out as an objective structured clinical examination (OSCE) consisting of three stations, each representing the three course modules. According to the following grade scoring system, the performance rating was checked: < 60 % failed, ≥ 60 - < 70 % sufficient, ≥ 70 % - < 80 % satisfying, ≥ 80 % - < 90 % good, ≥ 90 % very good.

Figure 1 Ultrasound Course Module Structure

MCP: Metacarpophalangeal joint, PIP: Proximal interphalangeal joint, DIP: Distal interphalangeal joint, OSCE: objective structured clinical examination

Results: Twelve dermatologists participated. The mean age of our cohort was 39 years (SD $\pm$ 9.99 years) with nine females (75 %). Eight were specialists in dermatology in mean for 11.4 years (SD $\pm$ 11 years). Four were assistant physicians practicing dermatology in mean for 3.06 years (SD $\pm$ 0.97 years).

The survey revealed no prior knowledge of MSUS. The overall mean score of all participants in the OSCE was 21.86 (SD $\pm$ 2.12) (87.44%) out of a total of 25 points resulting in a good grade. There was no statistically significant difference between the assistant physicians and the specialists in dermatology regarding the OSCE results. Table 1 shows the OSCE results.

Table 1. Objective structured clinical examination (OSCE) mean results for all three stations

OSCE stations	Mean absolute	Mean absolute	Standard Deviation	Mean percentage	Standard Deviation	Confidence Interval	Grade
1	18.92	18.92	+/- 3.07	75.67%	+/-12.27%	67.87-83.46%	Sufficient
2	23.83	23.83	+/-0.99	95.33%	+/-3.94%	92.83-97.84%	Very good
3	22.83	22.83	+/-0.37	91.33%	+/-1.49%	90.39-92.28%	Very good
OSCE station 1-3	21.86	21.86	+/-2.12	87.44%	+/-8.49%	66.36-108.53%	Good