USE OF CONTRAST ENHANCED ULTRASOUND SONOGRAPHY (CEUS) IN LARGE VESSEL VASCULITIS (LVV)

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Background: C-reactive protein (CRP) and erythrocyte sedimentation rate (ESR) are important parameters in the monitoring of LVV. Since Tocilizumab is approved for treatment of LVV these cheap and easy repeatable parameters are worthless because of their normalisation by Tocilizumab. MRI and PET-CT as an alternative are not only much more expensive, they are also not arbitrarily repeatable and available. Thus, monitoring of LVV Patients undergoing a Tocilizumab therapy remains unclear – especially upon showing a persisting thickened vessel wall.

Objectives: CEUS can increase the visibility of tissue perfusion, particularly if there is a very slow bloodflow, which cannot be detected by power-doppler sonography.

Methods: In this proof of concept study we investigated patients with active and inactive LVV (LVV-Q1/LVVQ4) with CEUS. After injection of ultrasound contrast agent we measured the contrasted area of large vessels in a transverse section where the lumen was completely contrasted and once again 4-8 seconds later. If the vessel wall incorporated the contrast agent the contrasted area increased (Fig 1). The increase of the contrasted area (CA) was correlated with CRP and ESR. Patients were only included if they were not treated with Tocilizumab and therefore ESR and CRP were usable to evaluate the disease activity.

Results: Of 16 patients (13 female, 3 male), 8 with aLVV and 8 with iLVV, respectively. The mean CRP was 85±69 (aLVV) vs. 2.4±6.6 mg/l (iLVV) (p<0.0001), the ESR 80±28 (aLVV) vs. 7±4 (iLVV) mm/h (p<0.0001). The mean age was 74.6±8.4 y (range 56-82). The increase of the contrasted area increased (Fig 1). The increase of the contrasted area was 66.6±44.6 (aLVV) vs. 2.4±6.6% (iLVV) (p<0.0001). The mean CRP was 85±69 (aLVV) vs. 4.00 to 25.00 mg; Q4: > 25.00 mg). Potential AEs included type 2 diabetes (T2D) diagnosis, hemoglobin A1c (HbA1c), blood glucose level, serious infections, cataracts, gastrointestinal bleeding or ulcer and increases in body mass index (BMI). Actual OGC use by patient could not be confirmed and is a limitation of this study.

Results: Mean age of the 785 eligible patients was 76 years (SD 9); 77% were female. Mean Deyo Charlson Comorbidity Index score at baseline was 1.57 (SD 2.01). The most common baseline comorbid conditions were cerebrovascular disease, diabetes, chronic pulmonary disease, and renal disease. Mean daily OGC dose was 28.9 mg during the first 6 months post-index. Mean (SD) CRP and ESR during the 12-month follow-up was 5.1 (13.6) and 26.5 (20.7), respectively. The proportion of patients with newly diagnosed T2D or with HbA1c £ 7.5% from Q1 to Q4. Serious infections ranged from 16.8% to 24.8% from Q1 to Q4 and cataract ranged from 12.0% to 21.7% from Q1 to Q4. The proportions of patients with glucose level, serious infections, cataracts, gastrointestinal bleeding or ulcer and increases in body mass index (BMI), Actual OGC use by patient could not be confirmed and is a limitation of this study.

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