Methods: Case series of patients with PMR and/or GCA with a refractory disease course, despite several lines of therapy, including methotrexate (MTX) and tocilizumab (TCZ), started treatment with BARI. All patients underwent periodic, standardised clinical and laboratory examinations, and also FDG-PET/CT. PMR-activity score (AS) was calculated at each visit except in patients with isolated large vessel vasculitis (LVV) or GCA.

Results: A total of six patients (five females and one male, median age 64 years, range 50-83) were treated with BARI. Two of them had isolated PMR (patients #1 and #6), two had PMR with associated LVV (patients #2 and #5), and one (patient #3) had cranial-GCA. Demographic and clinical characteristics are provided in Table 1. At the time of starting BARI, patients were taking a median prednisone dose of 8.75 mg/day (range 0-25), and the 4 patients with PMR±LVV had a median PMR-activity score (PMR-AS) of 23.3 (indicating high disease activity), which decreased to 1.58 after 6 months of treatment with BARI. Two of them could stop GC and continued BARI monotherapy (in one case, BARI was tapered down to 2 mg/day after 12 months).

After starting BARI, patient #3 (GCA) could gradually taper prednisone from 25 mg/day to 10 mg/day in six months, without reporting fever or headache. After one year of treatment, she feels well while taking prednisone 7.5 mg/day.

Patient #4 (LVV) remained clinically stable during the treatment with BARI, but a follow-up FDG-PET/CT showed LVV, and we decided to stop BARI and restart TCZ. After 4 months of treatment with BARI, patient #5 suffered from pneumonia, while she was also taking prednisone 15 mg/day. BARI was therefore stopped. No other AEs attributable to BARI were detected.

Conclusion: BARI appears as an appealing option for treating patients with PMR and/or GCA. Although these preliminary results should be confirmed by a RCT, BARI lowered rapidly disease activity and exerted a significant steroid-sparing effect, allowing GC withdrawal in 2 out of 6 patients.

Table 1. Demographic and clinical characteristics of patients.

Patient #	Sex	Age	Diagnosis	Previous treatment	Disease duration (months)	PMR-AS
1	F	66	PMR	MTX, HCQ, SSZ	25.5	40.5
2	F	78	PMR+LVV	TCZ, MTX	41.8	28.8
3	F	61	GCA	CYC, MMF, TCZ	119.8	N/A
4	F	60	LVV	TCZ	16.4	N/A
5	F	83	PMR+LVV	MTX, TCZ	24.4	15.2
6	M	50	PMR	MTX	24.6	17.8

CYC: cyclophosphamide, GCA: giant cell arteritis, HCQ: hydroxychloroquine, LVV: large vessel vasculitis, MMF: mycophenolate mofetil, MTX: methotrexate, N/A: not applicable, PMR: polymyalgia rheumatica, PMR-AS: PMR-activity score, SSZ: sulfasalazine, TCZ: tocilizumab.

Disclosure of Interests: Dario Camellino Speakers bureau: Medac, Eli Lilly, Paid instructor for: Mylan, Consultant of: Accord, Celgene, Novartis, Sanofi, Christian Dejaco Speakers bureau: Eli Lilly (<10.000€), Andrea Giusti Speakers bureau: UCB, Amgen, Kyowa Kirin, Abiogen Pharma, and Eli Lilly, Consultant of: EffRx, Abiogen Pharma, FRANCO MARTINI: None declared, Renzo Cosso: None declared, Giuseppe Girasole: None declared, Gerolamo Bianchi Speakers bureau: Amgen, MSD, Novartis, Pfizer, Roche, Sanofi, Genzyme, and Servier, Consultant of: Abbvie, Abiogen Pharma, BMS, Celgene, Eli Lilly, GSK, Janssen-Cilag, Medac

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AB0380 MACHINE LEARNING CAN PREDICT GIANT CELL ARTERITIS RELAPSE AFTER GLUCOCORTICOID TAPERING

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Background: To date reliable biomarkers and risk factors for relapsing giant cell arteritis (GCA) after glucocorticoid (GC) tapering are still lacking. In an increasing number of social and clinical scenarios, machine learning (ML) is emerging as a promising tool for the implementation of complex multi-parametric

decision algorithms. A ML approach allows to handle complex non-linear relationships between patient attributes that are hard to model with traditional statistical methods, merging them to output a forecast or a probability for a given outcome.

Objectives: To assess whether ML algorithms can predict GCA relapse after glucocorticoid tapering.

Methods: GC-naïve GCA patients who presented to 4 tertiary care centers between January 2015 and January 2019, who underwent GC therapy and regular follow up visits for at least 12 months were retrospectively analyzed and used for training and validation (through 10-fold cross-validation) of n.2 ML algorithms, namely Decision Trees (DT) and Random Forest (RF).

Test of the algorithms was carried out GCA patients referred to the same centers from March 2019 to September 2020 whose data was longitudinally recorded during the 12 months after presentation.

Demographic, clinical and laboratory characteristics (Erythrocyte Sedimentation Rate (ESR) and C Reactive Protein (CRP) levels) were gathered.

The outcome of interest was the GCA relapse within 12 months after induction of remission, during GC tapering.

The accuracy of the algorithms in both validation and test phases was assessed.

Results: The training and validation dataset consisted of n.85 GCA patients (59 female, 69.4%) with mean age 73.8 (±8.7) years at presentation. They were treated with 27.1 (±17.4) mg prednisone (PDN) equivalent at first visit. During GC tapering 34 of them (40%) experienced a disease relapse within 12 months. The test dataset consisted of n.22 patients (14 female, 63.4%) with mean age 75.5 (±8.7) years at presentation, who underwent GC induction therapy with a mean dose of 30.3 (±17.3) mg PDN equivalent. Nine of them (40.9%) had a GCA flare during GC tapering, within 12 months. Accuracy of DT and RF in predicting the outcome of interest on the training dataset was 68.3% and 73.4% respectively. On testing datasets DT and RF accuracy was 57.1 and 72.4%, respectively.

As shown in Figure 1, the most important patient attributes for RF forecast were found to be CRP and ESR baseline levels as well as age and symptom duration (months) at first visit.

Conclusion: RF algorithm can predict GCA relapse after glucocorticoid tapering with fairly good accuracy. To date this is one of the most accurate predictive modeling for such outcome. This ML method represents a reproducible tool executable on computers as well as mobile devices and capable of supporting clinicians in GCA patient management.

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