Appendix

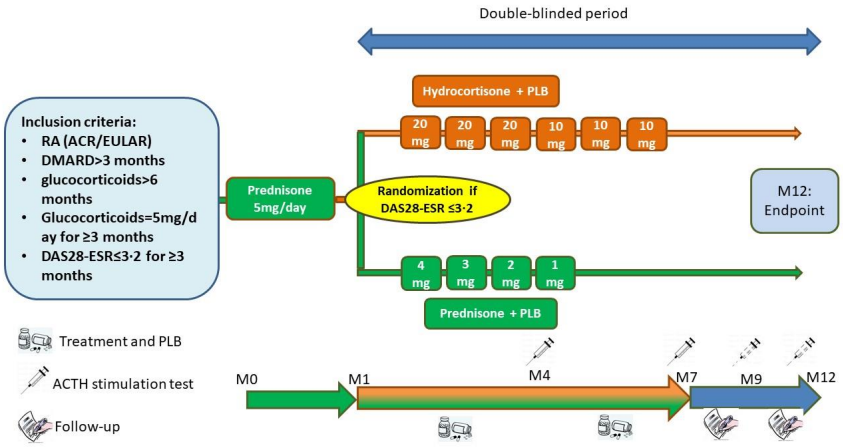
Inclusion criteria list:

1. Patients who have fulfilled the 2010 ACR/EULAR criteria for RA for at least 6 months.
2. Aged 18 or over.
3. Treated with a stable dose of synthetic disease-modifying anti-rheumatic drugs (sDMARDs) and/or with a biological DMARD (bDMARD) for at least 3 months.
4. Treated with oral prednisone or prednisolone for more than 6 months.
5. Treated with a stable dose of 5 mg/day of prednisone or prednisolone for at least 3 months.
6. In remission or low disease activity as defined by a DAS28-ESR under 3.2 for at least 3 months.
7. Patients with health insurance.
8. Patients who have signed a written informed consent form.

Non-inclusion criteria list:

1. Any chronic condition that would need long-term corticoid use (chronic lung diseases, etc.).
2. Evidence of a flare within the last 3 months.
3. Evidence of an allergy or intolerance to hydrocortisone or prednisone.
4. Chronic idiopathic or autoimmune clinical adrenal insufficiency.
5. Any GC joint injection within the last 3 months or scheduled in the next 3 months.
6. Any GC infusion expected within the next 12 months.
7. Any disease with GC contraindication.
8. Treatment with sultopride; injection of live vaccines.
9. Significant trauma or major surgery within the 3 months prior to the baseline visit.
10. Scheduled surgery in the next 12 months.
11. Fibromyalgia.
12. Foreseeable poor compliance with the strategy.
13. Patient with any condition that would prevent participation in the study and completion of the study procedures, including language limitation.
14. Alcohol and/or drug misuse as determined by the investigator.
15. Pregnancy or breastfeeding.
16. Patient is not willing to sign the informed consent.
17. Juridical protection.

Design Scheme



RA: rheumatoid arthritis, DMARD: disease modifying anti-rheumatic drugs, DAS28-ESR: disease activity score on 28 joints based on ESR, PLB: placebo, ACTH: adenocorticotropic hormone

Conditions analyzed as failure:

Patients were considered to be failed if one of these conditions was observed:

- if a patient needed more than two courses of glucocorticoids, or more than two glucocorticoid joint injections to control disease activity;
- if the standardized rescue treatment was not respected;
- if the patient was still receiving prednisone and/or hydrocortisone at the end of the study;
- if a patient had received more than 2 weeks of oral glucocorticoids for a reason other than the disease.

Factors associated with glucocorticoid discontinuation success:

Factors associated with glucocorticoid discontinuation success were first tested through logistic regression models systematically adjusted for the arm of randomization. The tested variables were age, sex, disease duration, rheumatoid factor, anti-citrullinated protein antibodies, erosions, baseline DAS28-ESR, remission/low disease activity duration before inclusion in the study, baseline HAQ-DI, baseline fatigue, Charlson comorbidity index, csDMARD intake, targeted DMARD intake, and prior glucocorticoid exposure duration. Variables associated with a p value of ≤0·2 were then included in a full multivariate model. Only significant (p value <0.05) confounders were maintained in the final model after a backward step-by-step procedure. The log-linearity of the relationship between the dependent and each independent continuous variable was tested.

Table S1: missing values in secondary outcomes

Outcomes	Missing values in hydrocortisone group, number	Missing values in prednisone group, number
Patients withdrawing prednisone only at 12 months	8	11
Patients needing glucorticoids supplementation during the study	0	0
Patients needing glucocorticoid joint injections during the study	0	0
Patients with at least a flare during the study	2	4
DAS28-ESR		
• at baseline	2	3
• M1	4	5
• M4	6	6
• M7	12	11
• M12	13	15
HAQ-DI		
• M1	0	0
• M4	5	4
• M7	9	8
• M12	9	13
RAID		
• M1	0	0
• M4	4	4
• M7	11	8
• M12	10	13
FACIT-F		
• M1	0	0
• M4	4	4
• M7	9	8
• M12	9	12
EQ-5D		
• M1	0	0
• M4	4	4
• M7	9	8
• M12	9	12
FLARE		
• M1	0	0
• M4	10	8
• M7	13	16
• M9	15	15
• M12	16	17

Figure S2: Flow-chart of patients with an abnormal ACTH stimulation test over time in both groups