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SAT0091

CLINICAL REMISSION PREDICTION USING BASELINE GENE EXPRESSION IN THE PERIPHERAL BLOOD OF DMARD-NAÏVE RHEUMATOID ARTHRITIS PATIENTS TREATED WITH METHOTREXATE

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Background: Rheumatoid arthritis (RA) is an autoimmune disease of unknown etiology, which is characterised by erosive arthritis (synovitis) and systemic inflammation. Methotrexate (MTX) is a basic drug for RA treatment. However, presently it is not possible to predict MTX efficacy in every patient while some patients are non-responsive to MTX or the drug may induce adverse effects. Therefore, identification of patients sensitive to MTX before treatment could significantly improve therapy outcome.

Objectives: To investigate the importance of baseline expression of genes involved in the metabolic and energy generation pathways in RA patients, which could serve prognostic biomarkers of treatment response to methotrexate.

Methods: Peripheral blood of 40 DMARD-naïve RA patients aged 47.5±15.5 years old, disease duration 7.9±6.0 weeks treated with MTX (15 mg/week) during two years and 26 healthy age-matched control subjects were examined. Clinical response was assessed by disease activity score (DAS) 28, serum levels of ACPA antibodies, C-reactive protein (CRP), and rheumatoid factor (RF). Clinical remission was assessed according to ACR criteria and DAS28 (DAS28 <2.6). Bone erosion and joint space narrowing (JSN) scores were monitored by X-ray analysis. Protein concentrations were measured using ELISAs. Total RNA was isolated and used in gene expression studies performed with quantitative real-time RT-PCR.

Results: MTX treatment significantly decreased the disease activity according to DAS28. At the end of the study the majority of patients demonstrated moderate disease activity (DAS28 >3.2 <5.1), four patients retained high disease activity while 12, attained remission (DAS28 <2.6). Gene expression analysis has revealed that RA patients, which attained clinical remission after MTX treatment demonstrated significantly higher baseline expression of genes associated with glycolysis (Glut1, PKM), hypoxia (HIF1α), and cell cycle related cyclin D1 compared to other examined RA patients and healthy subjects. RA patients, which retained high disease activity after treatment had baseline expression of genes related to apoptosis (p21, caspase 3), tissue regeneration (TGFβ1, RUNX2) and cyclin D1, significantly lower than that in the controls and other examined RA patients.

Conclusions: Clinical remission attainment in DMARD-naïve RA patients treated with methotrexate is associated with high baseline expression of genes associated with glycolysis, hypoxia and cyclin D1 compared to other examined patients. Non-responsiveness to MTX is accompanied by lower baseline expression of genes related to apoptosis, tissue regeneration, and cyclin D1 compared to controls. Increased baseline expression of cyclin D1 gene compared to healthy subjects could serve a positive prognostic marker of sensitivity to methotrexate therapy.

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PALINDROMIC RHEUMATISM (PR): EXPERIENCE IN A REAL WORLD SETTING – THE NOTTINGHAM CASEMIX REGISTER (NCR)

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Background: PR is an unusual arthritis characterised by brief, self-limiting attacks of synovitis usually affecting one joint at a time with outcomes including transformation to persistent inflammatory rheumatic disease, usually rheumatoid arthritis (RA), continuation of PR and spontaneous remission. Seropositivity for rheumatoid factor (RF) or ACPA may predict transformation to RA. We examined the experience of PR in a large UK teaching hospital rheumatology department using data collected routinely at outpatient encounters. The NCR records a primary rheumatology diagnosis, demographic data, administrative details (type of consultation, grade of clinician and outcome) for every rheumatology consultation. Between March 2016 and February 2017 19 832 clinical encounters were logged forming the basis of this study.

Objectives: To identify the burden of PR in a large UK teaching hospital and its management in a real world setting.

Methods: PR patients were extracted from the NCR and their electronic record (Bloods/Radiology/Clinic letters) analysed for any change in diagnosis (prior to or following PR diagnosis), treatments prescribed, serological status and radiological findings. In the subgroup whose diagnosis changed, a separate analysis to look at predictive factors was carried out.

Results: 101 patients (149 attendances) were analysed (24 new patient appointments, 125 follow ups). The female:male ratio was 2.16, mean age 53.5. Over half were between 40–59. 31 new diagnoses of PR were made in the study period. The NCR prevalence of PR was 1%. Duration of PR in previously diagnosed patients was a mean of 4 years. The diagnosis was changed in 13 PR patients (to RA in 9). Serological status is shown below:

Status	RhF	ACPA	Dual Rhf/ACPA
Positive	53	48	43
Borderline	7	3	NA
Negative	37	39	27
Not known	4	11	13

Plain radiographs were available for 88 patients (hands- 69, feet- 54). Erosions were noted once (RA was then diagnosed). Synovitis was detected in 10 of 25 patients who underwent ultrasound and in 2 of 18 patients who underwent small joint MRI. 63 patients were on DMARDs, most often HCQ.⁴³ 9 received dual DMARD therapy. DMARD therapy was more frequent in sero-positive patients. PR patients later diagnosed as RA were older (64.9 vs 53.5 years) and more commonly seropositive (6 being dual antibody positive) with similar gender ratio (2:1 F:M). The duration of PR diagnosis ranged from 6 months to 10 years (average 4.2).

Duration of PR prior to new Diagnosis	Change to RA	Change to other diagnosis
Less than 1 year	1	2
1–2 years	2	1
2–5 years	3	1
>5 years	3	0

Abstract SAT0092 – Figure 1. PR patients by age

Conclusions: PR accounted for 1% of all patients on the NCR with 10% of patient's having their diagnosis changed in the study period. RA patients on the NCR numbered 2292, making the RA:PR ratio 22.7:1. Approximately half of PR patients were RF/ACPA positive or both with over half the PR population on DMARD treatment, most often HCQ. PR patients developing RA were older and ACPA/RF positivity was more common. Although a third PR patients who later developed RA did so within 2 years, the majority took longer with some diagnosed as RA over 5 years later suggesting PR patients, especially if seropositive, should be followed long term. Two year follow up will be available from March 2018.

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MALE SEX PREDICTS A FAVOURABLE OUTCOME IN SERONEGATIVE EARLY RHEUMATOID ARTHRITIS

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Background: Rheumatoid factor (RF) and anti-citrullinated peptides antibodies (anti-CCP) are universally recognised negative prognostic factors in rheumatoid arthritis (RA). The majority of studies of early RA have focused on RF and anti-