Immuno-Haematology Results in Behçet's Syndrome

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Introduction

- Behçet's Syndrome (BS) is a rare systemic vasculitis of unknown aetiology characterised by recurrent orogenital aphthous ulcers & uveitis
- Little published work on routine Immunology and Haematology results in BS
- In this study we aim to compare lymphocyte subset, immunoglobulin G, A, M (IgGAM) and full blood count (FBC) results in BS patients to published reference ranges
  - Determine the relevance of measuring lymphocyte subsets, full blood count and immunoglobulins in patient management
  - Neutrophil-Lymphocyte ratio (NLR), platelet-lymphocyte ratio (PLR) and Systemic Immune Inflammation (SII) index calculated from measured FBC results

Methods

- All methods verified and assessed to ISO 15189 standards
- Testing & analysis performed by HCPC-registered & competency-assessed Biomedical & Clinical Scientists at East and South East London (ESEL) Pathology Partnership
- Samples taken from patients attending London Behçet's Centre of Excellence between August 2017 & December 2021 (table 1)

Test	Lymphocyte subsets	IgGAM	FBC
Sample type	EDTA blood	Serum	EDTA blood
Number of samples	909	796	852
Number of patients	635	582	607
ESEL department	Immunology	Clinical Chemistry	Haematology
Method	Lyse no wash flow cytometry	Turbidimetry	Fluorescent flow cytometry
Analyser	BD SPA II/BD Duet BD Canto II/BD Lyric	Roche Cobas c-207	Sysmex XN-2000
Reference range	Comans-Bitter et al	Milford Ward	Dacie and Lewis

Table 1: Summary of samples tested and analysis methods

Results

- At least one parameter was outside the reference ranges in 94% of all samples (n=909) (fig. 1) and 93% of first samples (n=635) (fig. 2)

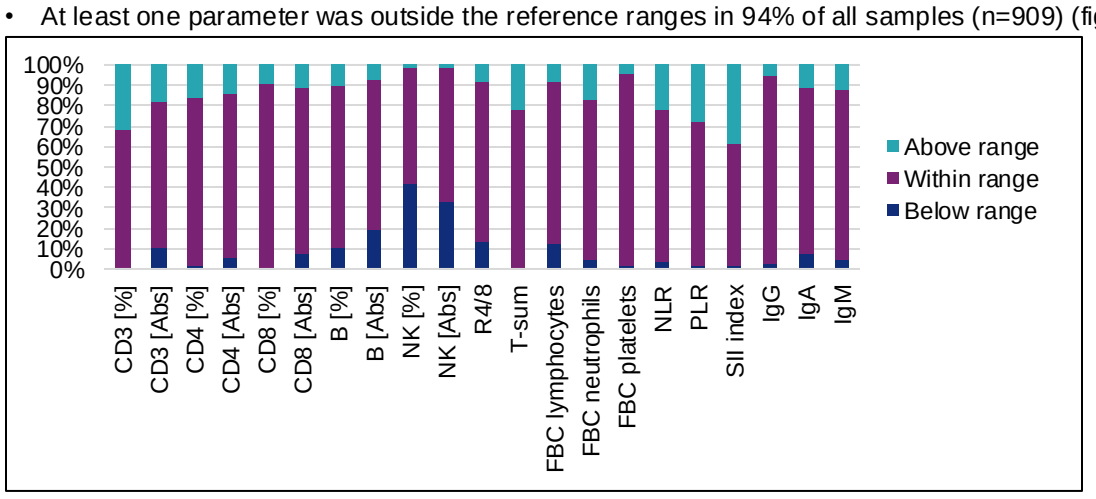

Figure 1: Most results in all parameters were within range but all parameters had out-of-range results

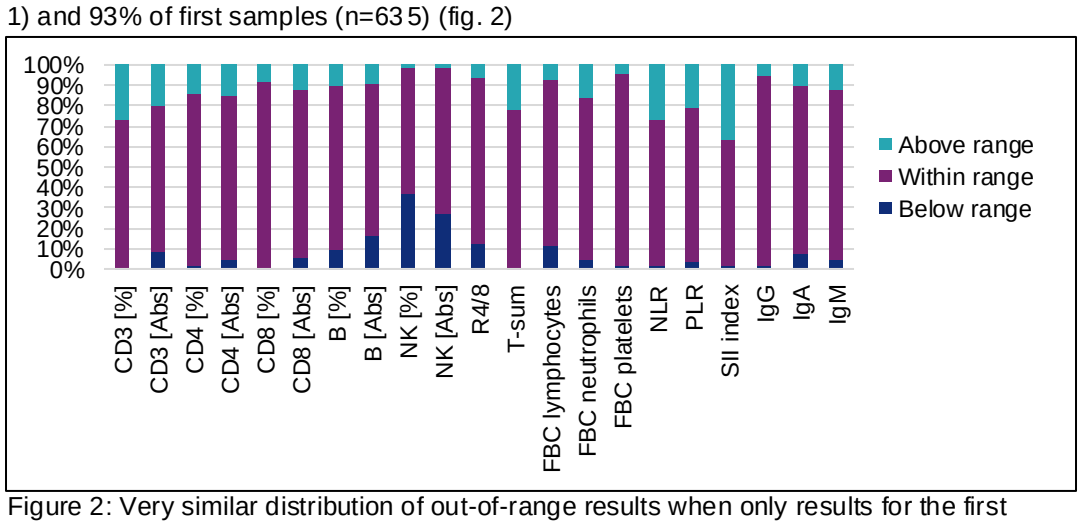

Figure 2: Very similar distribution of out-of-range results when only results for the first sample received for patients were analysed.

- At least 2 samples were received for 179 patients
- A comparison of longitudinal results on 1st and 2nd samples showed results were mostly stable with only a significant difference in T-sum (table 1)

Parameter	p value
CD3 [%]	0.1582
CD3 [Abs]	0.8603
CD4 [%]	0.5322
CD4 [Abs]	0.9208
CD8 [%]	0.5279
CD8 [Abs]	0.5649
B [%]	0.5682
B [Abs]	0.9045
NK [%]	0.2463
NK [Abs]	0.3547
R4/8	0.3289
T-sum	0.0049
FBC lymphocytes	0.9246
FBC neutrophils	0.0825
FBC platelets	0.7406
NLR	0.0740
PLR	0.3470
SII index	0.0861
IgG	0.7168
IgA	0.5168
IgM	0.3450

Table 1: 1st and 2nd results compared in 179 samples. Only T-sum results were significantly different (p<0.005)

- The findings of this study of Immuno-Haematology results in this defined cohort were comparable to other available published studies (table 2)

Parameter	Finding in this cohort	Literature	Comparison
CD3 [%]	Raised in 32%, most within range	Within range, low	No published studies on routine lymphocyte subset results
CD3 [Abs]	Raised in 18%, most within range	Within range, low	
CD4 [%]	Raised in 16%, most within range	Reduced	
CD4 [Abs]	Raised in 15%, most within range	Reduced	
CD8 [%]	Raised in 9%, most within range	Raised	
CD8 [Abs]	Raised in 11%, most within range	Raised	
B [%]	Reduced in 11%, most within range	Within range, reduced, raised	
B [Abs]	Reduced in 19%, most within range	Within range, reduced, raised	
NK [%]	Reduced in 41%, most within range	Reduced	
NK [Abs]	Reduced in 33%, most within range	Reduced	
R4/8	Reduced in 13%, most within range	Reduced	
T-sum	Raised in 22%, most within range	Reduced	
FBC lymphocytes	Reduced in 12%, most within range	Mostly within range	Agree
FBC neutrophils	Raised in 17%, most within range	Often raised	Agree
FBC platelets	Raised in 4%, most within range	Often raised	Agree
NLR	Raised in 23%, most within range	Raised	No studies comparing results to reference ranges
PLR	Raised in 28%, most within range	Within range, raised	
SII index	Raised in 39%, most within range	Raised	
IgG	Raised in 5%, most within range	Mostly within range, raised in active disease	Agree
IgA	Raised in 11%, most within range	Mostly within range, reduced in some patients	Agree
IgM	Raised in 13%, most within range	Most within range	Agree

Table 2: Findings in this cohort were compared to published results. This is the first study comparing lymphocyte subset and FBC results in BS to published reference ranges.

Discussion

- At least one lymphocyte subset parameter outside of references ranges in 94% of all samples
- Results in this cohort support previously published results
- The similarity of longitudinal results suggests these tests should only be requested when treatment is changed
- The high number of samples with results outside reference ranges suggests that routine Immuno-Haematology profile testing is relevant to the management of BS
- Further analysis will aim to analyse the association of out-of-range results with symptom severity scores and investigate the impact of clinical outcomes on results and to propose a standardised Immuno-Haematology profile to aid in the management of BS patients