PEDIATRIC RHEUMATOLOGY

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PReS-FINAL-2035: Fatty acid profiling: potential new biomarkers in JIA

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Introduction

The prostanoids are a family of biologically active lipids derived from the 20-carbon essential fatty acids (LCPUFA) which are involved in all aspects of the immune response including the resolution of inflammation. ω3-fatty acids, EPA DPA and DHA are anti-inflammatory, whilst the ω6-fatty acid, Arachidonic acid (AA) and its metabolites: 13 (S)-HETE, TXB2, PGF2α and 6-k-PGF1α are pro-inflammatory. Liquid Chromatography Tandem Mass Spectrometry (LC-MSMS) allows analyses of multiple prostanoids with high accuracy using 3 mm blood spots. This method has never been used in JIA and may find biomarkers which can help predict disease activity and treatment response.

Objectives

To measure prostanoid profiles in patients with JIA using LC-MSMS.

Methods

254 samples from 114 JIA patients and 6 healthy controls (HC) were collected onto specially prepared filter papers and analysed using LC-MSMS.

Results

The JIA M:F ratio was 1:1.4, the average age at study entry (9.4 ± 5.0 y), average disease duration (56.1 ± 46.1 m), with 25% JIA receiving treatment with NSAID, 11% with Methotrexate (MTX), and 10% with Biologics. 13(S)HODE and DHA levels were significantly different between JIA patient groups ($p = 0.05$ for both; 13(S)HODE oligo vs poly $p = 0.02$; DHA SoJIA vs RF+ Poly $p = 0.007$). There was a positive correlation between JADAS and PGB2 ($p = 0.046$). There were lower levels of pro-inflammatory prostanoids in JIA (Table 1).

Conclusion

In our JIA cohort, we found that PGB2 is correlated with disease activity and that levels of pro-inflammatory prostanoids are reduced, particularly in polyarthritis. This may reflect the degree to which the pro-resolving prostanoids are activated in patients with relatively long average disease duration. It is also possible that measurement of a combination of prostanoids will help us predict changes in disease activity and treatment response over time more accurately. Longitudinal analysis the relationship between disease activity and prostanoid profiles is underway.

Disclosure of interest

None declared.

Table 1

Prostanoid/JIA subtype	Oligo	Extended Oligo	Poly	RF+ Poly	JPSA	ERA	SoJIA
HODE			$p = 0.001$		$p = 0.002$	$p = 0.01$	
DPA			$p = 0.02$		$p = 0.017$	$p = 0.01$	
PGF2a	$p = 0.001$	$p = 0.03$	$p = 0.007$				$p = 0.04$
TBX2	$p = 0.009$	$p = 0.004$	$p < 0.001$	$p = 0.007$	$p = 0.04$		

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