

Axial Spondyloarthritis: Profiling of MiRNAs in Peripheral Blood Mononuclear Cells

Pekáčová A.^{1,2}, Baloun J.¹, Bubová K.^{1,2}, Gregová M.^{1,2}, Forejtová Š.^{1,2}, Hořínková J.^{1,2}, Hušáková M.^{1,2}, Tomčík M.^{1,2}, Gatterová J.^{1,2}, Vencovský J.^{1,2}, Pavelka K.^{1,2} and Šenolt L.^{1,2}

¹Institute of Rheumatology, Prague; ²Department of Rheumatology, 1st Faculty of Medicine, Charles University, Prague, Czech Republic

Introduction:

- microRNAs (miRNAs) are **small non-coding RNAs** regulating up to 60 % of human mRNAs, including genes related to **axial spondyloarthritis (axSpA)**.
- This study aims to **profile miRNome** and to identify candidate miRNAs determining disease severity in patients with **non-radiographic (nr)** and **radiographic (r) axSpA**.
- This study focus on **miRNAs association with diseases activity** (based on Ankylosing Spondylitis Diseases Activity Score (ASDAS) and radiographs).

Methods:

Screening: MPS	Validation: RT-qPCR	Materials:
Cohort: r-axSpA n=38 nr-axSpA n=38 HC n=20	Cohort: r-axSpA n=47 nr-axSpA n=44 HC n=52	PBMCs

		HC	nr-axSpA	r-axSpA	axSpA	p-value (subdia.)
Age [years]	Mean (SD)	36.1 (11.7)	39.8 (10.9)	38.0 (12.2)	38.9 (11.55)	0.513
CRP [mg·L ⁻¹]	Median (IQR)	1.4 (2.0)	2.8 (15.2)	7.6 (16.5)	5.2 (15.85)	0.001
Gender	Male (%)	11 (55.0)	16 (42.1)	28 (73.7)	22 (57.9)	0.020
ESR [mm·h ⁻¹]	Median (IQR)	-	12.8 (17.1)	18.4 (14.9)	15.6 (16)	0.081
Duration [years]	Mean (SD)	-	10.6 (10.5)	10.9 (9.1)	10.75 (9.8)	0.911
HLAB27	n (%)	-	31 (81.6)	35 (92.1)	66 (86.85)	0.309
Peripheral arthralgia	n (%)	-	11 (28.9)	6 (15.8)	17 (22.35)	0.271
csDMARD	n (%)	-	7 (18.4)	6 (15.8)	13 (17.1)	1.000
bDMARD	n (%)	-	1 (2.6)	1 (2.6)	2 (2.6)	1.000
Corticosteroids	n (%)	-	0 (0.0)	3 (7.9)	3 (3.95)	0.239
NSAIDs or COX	n (%)	-	18 (47.4)	16 (42.1)	34 (44.75)	0.818
ASDAS	Median (IQR)	-	2.2 (1.3 to 3.1)	2.4 (1.6 to 2.9)	2.3 (1.6 to 2.9)	0.86
- Remission	n (%)	-	10 (26.3)	7 (18.4)	17 (22.4)	0.28
- Low DA	n (%)	-	5 (13.2)	7 (18.4)	12 (15.8)	
- High DA	n (%)	-	14 (36.8)	20 (52.6)	34 (44.7)	
- Very High DA	n (%)	-	9 (23.7)	4 (10.5)	13 (17.1)	
BASFI	Median (IQR)	-	1.4 (0.3 to 2.6)	1.6 (0.6 to 3.2)	1.5 (0.5 to 2.9)	0.4
mSASSS	Median (IQR)	-	0 (0 to 0.75)	2 (0 to 12.88)	0 (0 to 3.3)	<0.01

Tab 2 Demographic and clinical characteristics of 96 subjects included in the screening cohort.

Conclusion:

- **miR-4286** and **miR-451a** are positively associated with **clinical and laboratory disease activity**.
- **miR-1248** and **miR-26a-2-3p** are **downregulated** in axSpA patients compared to healthy individuals.
- In this extensive study, we identified **a set of miRNAs** that could **play a role in the proces of axSpA**.
- None of the miRNAs could distinguish the form of axSpA.

Results:

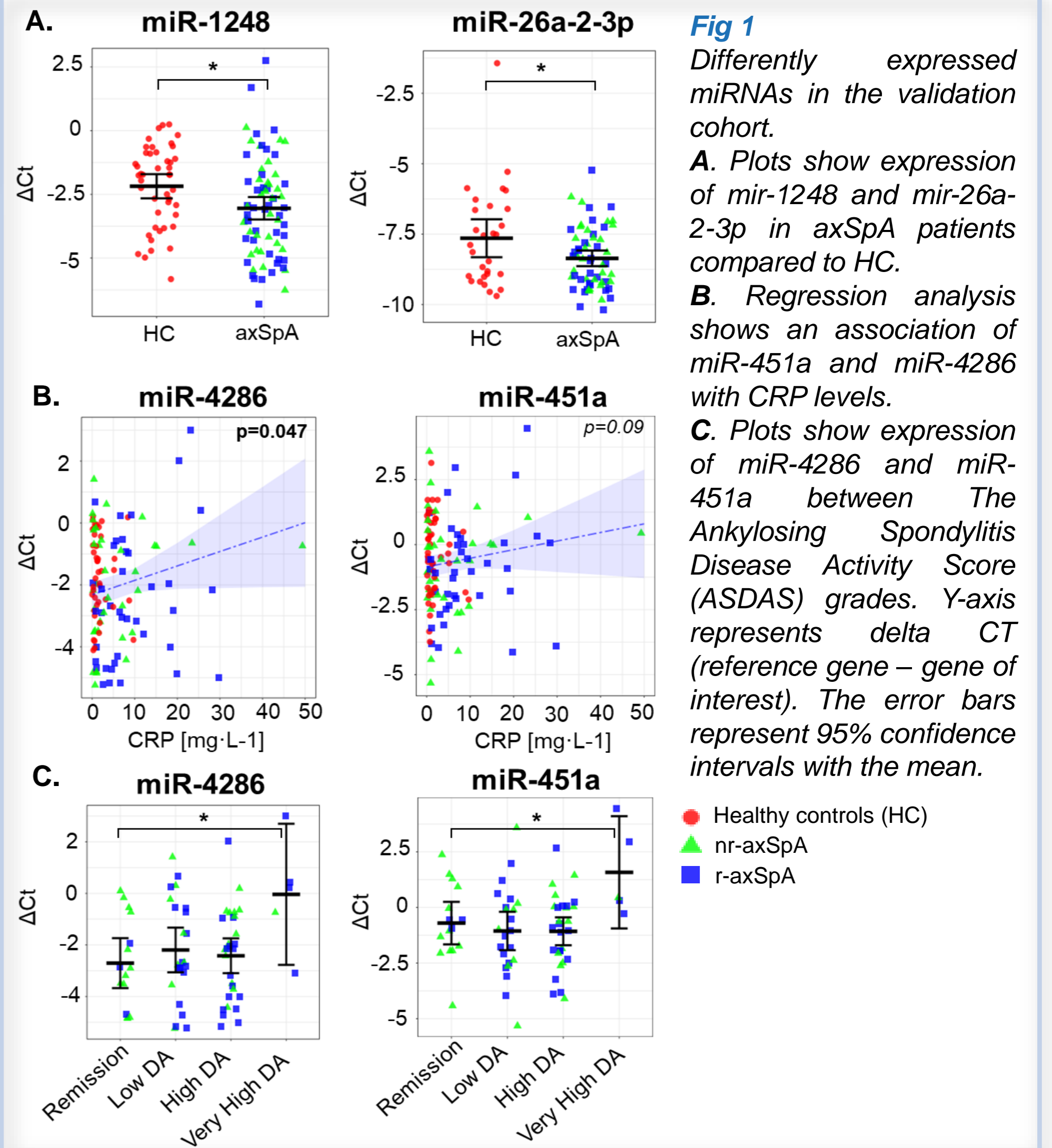


Fig 1 Differently expressed miRNAs in the validation cohort. A. Plots show expression of mir-1248 and mir-26a-2-3p in axSpA patients compared to HC. B. Regression analysis shows an association of miR-451a and miR-4286 with CRP levels. C. Plots show expression of miR-4286 and miR-451a between The Ankylosing Spondylitis Disease Activity Score (ASDAS) grades. Y-axis represents delta CT (reference gene – gene of interest). The error bars represent 95% confidence intervals with the mean.

Fig 2 Bivariate analysis of candidate miRNAs in screening cohort.

