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Initial renal manifestations and risk factors affecting renal function in patients with ankylosing spondylitis

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Objectives: Renal involvement is one of the rare extra-articular complications caused by ankylosing spondylitis (AS). The present study was aimed to investigate the abnormal renal findings at the time of diagnosis and identify the risk factors for decreased renal function in patients with AS.

Methods:

Clinical and biochemical data of 1489 AS patients were collected. All patients were initially diagnosed at a single center, and a total 865 of 1489 patients were followed up for at least 1 year. At the time of initial diagnosis, abnormal renal findings; hematuria, proteinuria, decreased renal function (eGFR < 60mL/min/1.73m^2) were investigated. 865 outpatients were annually checked serum creatinine. We measured eGFR by CKD-EPI method and investigated the risk factors for decreased renal function. Multivariate logistic regression was used for analyzing risk factors for decreased kidney function in AS.

Results:

Of 1489 patients with AS, 205 showed abnormal renal findings. 160 showed hematuria, 57 showed proteinuria, and 15 showed decreased renal function at initial presentation. Female AS patients had higher abnormal renal findings. Inflammatory markers such as erythrocyte sedimentation rate (ESR), C-reactive protein (CRP) were associated with abnormal renal findings. Multivariate logistic regression analysis revealed that gender, hypertension, ESR and serum albumin were associated with abnormal renal findings. Of the 865 patients, 33 patients had decreased renal function as a result of analysis of patients who were outpatients for more than one year (initial mean eGFR 82.98 mL/min/1.73m^2, last follow-up mean eGFR 50.93mL/min/1.73m^2). Unlike the factors associated with abnormal renal findings at diagnosis, female, hypertension, ESR did not affect renal function. Age and albumin were associated with decreased renal function.

Conclusions:

ESR and hypertension was associated with initial abnormal renal findings (hematuria, proteinuria, decreased renal function) at diagnosis of AS. Age and albumin were associated with the decreased kidney function in patients with AS.

Table 1. Comparisons of clinical and biochemical characteristics between renal involvement and non-renal involvement in AS

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Variables	Abnormal renal findings		*p* value
	Yes (n=205)	No (n=1284)	
Demographic characteristics			
Gender, male, n(%)	123 (60.0%)	980 (76.3%)	<0.001
Age (years)	45.8 ± 16.2	41.0 ± 14.2	<0.001
Hypertension	35 (17.1%)	113 (8.8%)	<0.001
Diabetes mellitus	17 (8.3%)	65 (5.1%)	0.060
Medical histories			
NSAIDs, n(%)	201 (98.0%)	1267 (98.7%)	0.479
TNF-alpha, n(%)	99 (48.3%)	582 (45.3%)	0.429
DMARDs, n(%)	188 (91.7%)	1142 (88.9%)	0.234
Clinical manifestations			
Peripheral arthritis n(%)	65 (31.7%)	311 (24.2%)	0.022
Extraarticular manifestation, n(%)	41 (20.0%)	259 (20.2%)	0.955
HLA-B27 positive, n(%)	166 (81.8%)	1123 (88.1%)	0.012
ESR (mm/h)	50.4 ± 33.7	39.2 ± 30.5	<0.001
CRP (mg/L)	3.0 ± 4.2	2.1 ± 3.4	<0.001
Hgb	13.0 ± 1.8	13.8 ± 1.7	<0.001
PLT	316.6 ± 94.0	302.9 ± 85.0	0.036
BUN	14.4 ± 5.2	13.5 ± 3.8	0.002
Creatinine	0.8 ± 0.2	0.8 ± 0.2	0.354
Albumin	4.2 ± 0.5	4.4 ± 0.4	<0.001

Table 2. Risk factors for progression to chronic kidney disease progression in AS through the multivariate analysis

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Parameter	Odds ratio (95% CI)	*p* value
Abnormal renal findings at initial diagnosis (n=205)		
Female	1.978 (1.416-2.764)	<0.001
Hypertension	2.204 (1.390-3.382)	0.001
ESR	1.007 (1.001-1.013)	0.010
Albumin	0.651 (0.436-0.973)	0.037
Progression to Chronic kidney disease (n=33)		
Age	1.090 (1.053-1.128)	<0.001
Albumin	0.438 (0.205-0.935)	0.033