

Clinical Outcomes in Overt vs. Subclinical Primary Aldosteronism: Impact of New Diagnostic criteria

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Background/Aims: Recently, overt primary aldosteronism (PA) has been considered a severe form of 'Renin-independent aldosteronism.' PA is recognized as a disease with a wide spectrum of severity, and nowadays, a milder form of PA, known as subclinical PA, has emerged, which does not meet the classical criteria used for diagnosing PA. However, the clinical significance of these entities is still poorly understood. As a result, there are differing opinions regarding the need to relax the traditional criteria to diagnose overt PA for better identification of patients with subclinical PA. In this study, we investigated the difference in the prevalence of hypertension (HTN) and various clinical outcomes between overt PA and subclinical PA patients.

Methods: A retrospective, cross-sectional study was designed to determine whether overt PA or subclinical PA is associated with HTN and other clinical outcomes. 1722 patients in Hospital of Konyang University who measured renin and aldosterone levels were randomly divided into 2 groups, group A and B, and assigned to be evaluated for PA with the use of existing diagnostic criteria (aldosterone/renin ratio >30 & aldosterone >15ng/dL), or with the use of new diagnostic criteria (aldosterone >10ng/dL & renin <1ng/mL/hr). The target outcomes were HTN, diabetes (DM), cardiovascular diseases (CVD), chronic kidney disease (CKD) and metabolic syndrome.

Results: Clinical characteristics are shown in table 1. Both overt and subclinical PA patients did not show any significant associations in prevalence of HTN, DM, CVD, CKD, and hypokalemia. However, subclinical PA patients had associations with obesity, old age, and female gender. On the other hand, overt PA patients showed associations only with old age and female gender. (table 2)

Conclusions: In this study, use of new criteria for the diagnosis of PA did not make a difference in the prevalence of HTN and other clinical features, except for obesity. We suggest that further studies are needed to determine whether diagnosing and treating PA using the new diagnostic criteria is more effective in early detection and management, as well as in improving clinical features.

Table 1

	Group A (n=827)	Group B (n=895)	Total (n=1722)	p-value
Age (y)	47.76	48.09		0.694
Female (n/%)	390 (47.2)	411 (45.9)	801 (46.5)	0.607
HTN (n/%)	660 (80.1)	746 (83.5)	1406 (81.9)	0.069
DM (n/%)	204 (24.8)	252 (28.3)	456 (26.6)	0.102
CVD (n/%)	137 (16.7)	173 (19.4)	310 (18.1)	0.149
eGFR (ml/min/1.73m ²)	97.01	95.21		0.167
Serum K ⁺ (mEq/L)	4.07	4.14		0.047
BMI (kg/m ²)	25.46	25.61		0.588
Aldosterone (ng/dL)	13.76	14.61		0.751
Plasma renin activity (ng/mL/hr)	3.03	3.08		0.605
Aldosterone-renin ratio (ARR)	31.21	38.33		0.395

Table 2

	Group A			Group B		
	Normal	Overt PA	p-value	Normal	Subclinical PA	p-value
HTN (%)	79.0	85.4	0.079	83.3	84.5	0.702
DM (%)	24.0	28.5	0.256	27.6	31.0	0.388
CVD (%)	16.8	16.0	0.800	19.0	20.8	0.595
CKD (%)			0.555			0.623
CKD G1 (eGFR ≥ 90)	68.7	68.9		65.2	67.1	
CKD G2 (60 ≤ eGFR < 90)	23.1	21.5		24.8	21.9	
CKD G3a (45 ≤ eGFR < 60)	4.0	4.4		4.3	3.9	
CKD G3b (30 ≤ eGFR < 45)	2.6	2.2		2.8	2.6	
CKD G4 (15 ≤ eGFR < 30)	1.1	0.7		1.9	1.3	
CKD G5 (eGFR < 15)	0.6	2.2		1.0	3.2	
Potassium (%)			0.191			0.266
Hypokalemia (K < 3.5)	11.9	12.0		9.5	11.2	
Normal (3.5 ≤ K < 5.5)	85.9	80.6		85.3	86.2	
Hyperkalemia (K ≥ 5.5)	2.1	7.4		5.2	2.6	
Age (%)			0.005			0.011
Under 19	6.4	0.7		5.4	1.8	
20-29	10.5	4.2		12.5	7.1	
30-39	20.6	18.8		17.1	11.8	
40-49	20.1	27.8		21.5	29.0	
50-59	15.8	21.5		15.8	20.1	
Over 60	26.5	27.1		27.7	30.2	
Female (%)	44.1	61.8	0.000	43.0	58.6	0.000
BMI (%)			0.431			0.013
Underweight (BMI < 18.5)	4.7	1.8		3.1	2.1	
Normal (18.5 ≤ BMI < 23)	26.2	30.6		27.0	19.9	
Overweight (23 ≤ BMI < 25)	20.9	11.7		23.9	17.0	
Obesity stage 1 (25 ≤ BMI < 30)	33.1	40.5		30.7	39.7	
Obesity stage 2 (30 ≤ BMI < 35)	11.6	10.8		10.7	19.1	
Obesity stage 3 (BMI ≥ 35)	3.6	4.5		4.5	2.1	