

Patient selection for confirmatory tests of primary aldosteronism (PA) using the PA discrimination score

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OBJECTIVE:

Patient selection for confirmatory tests of primary aldosteronism (PA) is one of the challenge in the clinical practice due to fluctuations of serum aldosterone and renin concentrations. The aim of the present study is to develop selection criteria for confirmatory tests.

METHODS:

The comprehensive medical examination for PA was performed for 2276 community-dwelling population who presented to the Iwaki Health Promotion project between May 2014 and May 2015. An aldosterone renin ratio (ARR) cutoff ≥ 200 , with plasma aldosterone concentration (PAC) ≥ 120 pg/mL was used to PA screening. We divided those subjects into two groups: PA screening positive and negative. As positive patients with PA, we included 123 patients with PA who underwent unilateral adrenalectomy in our hospital between 2000 and 2017. We compared serum data and clinical parameters between PA patients and PA screening negative subjects using discrimination analysis, and developed the PA discrimination score. Predictive accuracy of the PA discrimination score was evaluated ROC analysis and area under the curve (AUC). The PA discrimination score was applied to PA screening positive subjects to evaluate the clinical significance.

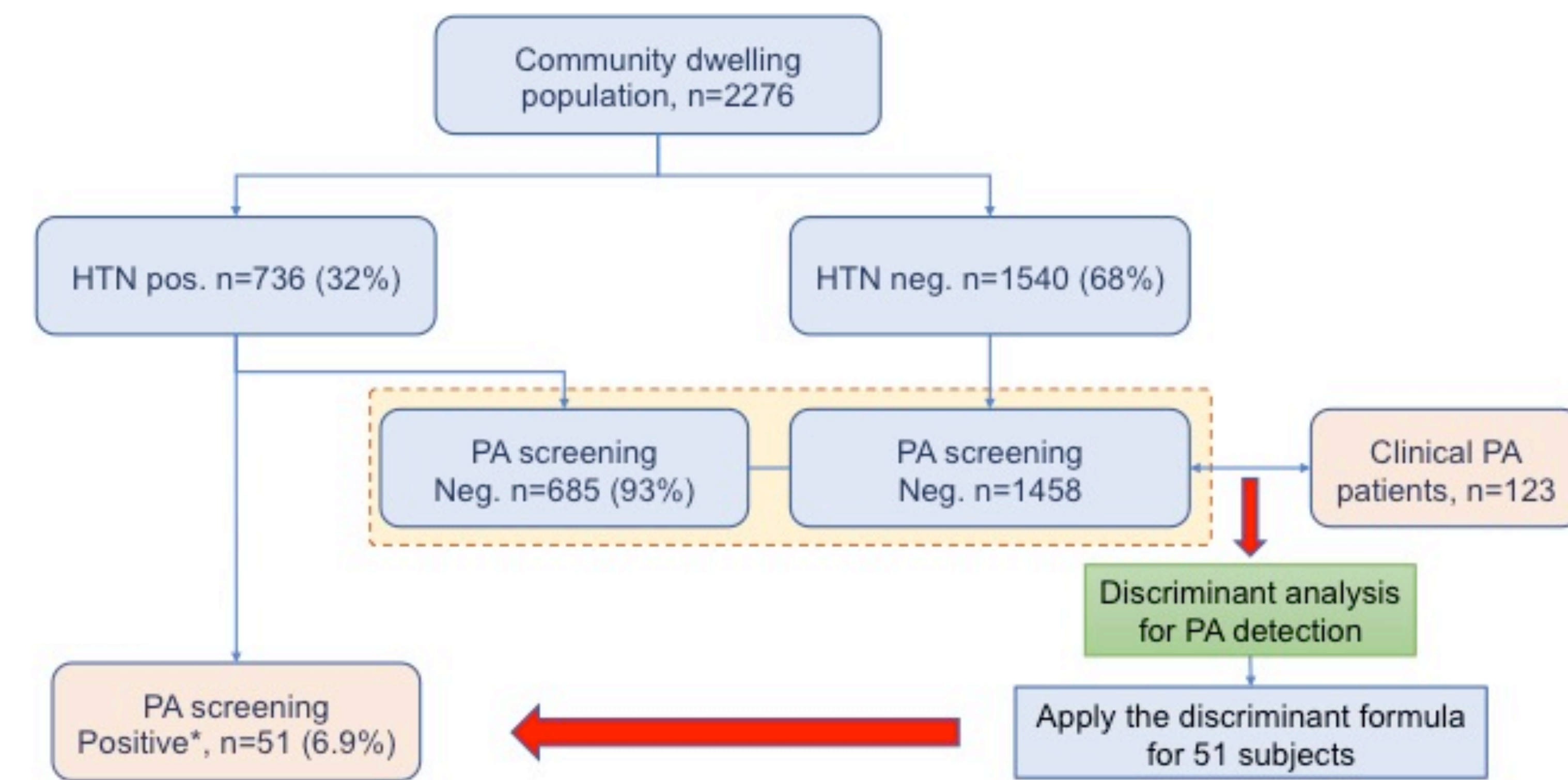
RESULTS:

The score was applied to PA screening positive subjects to evaluate the significance for PA detection. Of the 2276 subjects, 2143 were negative for PA screening, and 51 were positive for PA screening, an overall prevalence of 2.2%. The prevalence of PA screening positive subjects among hypertension (HTN) was 6.9%. Discrimination analysis was performed in 2143 PA negative subjects and 123 PA patients using PAC, plasma renin activity (PRA, ng/mL/hr), presence or history of HTN, and serum potassium levels. Discrimination formula: $-1*(PAC*-0.0067+PRA*0.0546+HTN*-1.0433+K*1.6904-5.3494)$ showed significant association with PA diagnosis (AUC: 0.96). We can detect all 12 subjects with the cutoff value of 1.5 that were strongly suspicious (PAC ≥ 120 pg/mL, ARR ≥ 200 , and K <3.5 mEq/L) for PA.

CONCLUSION:

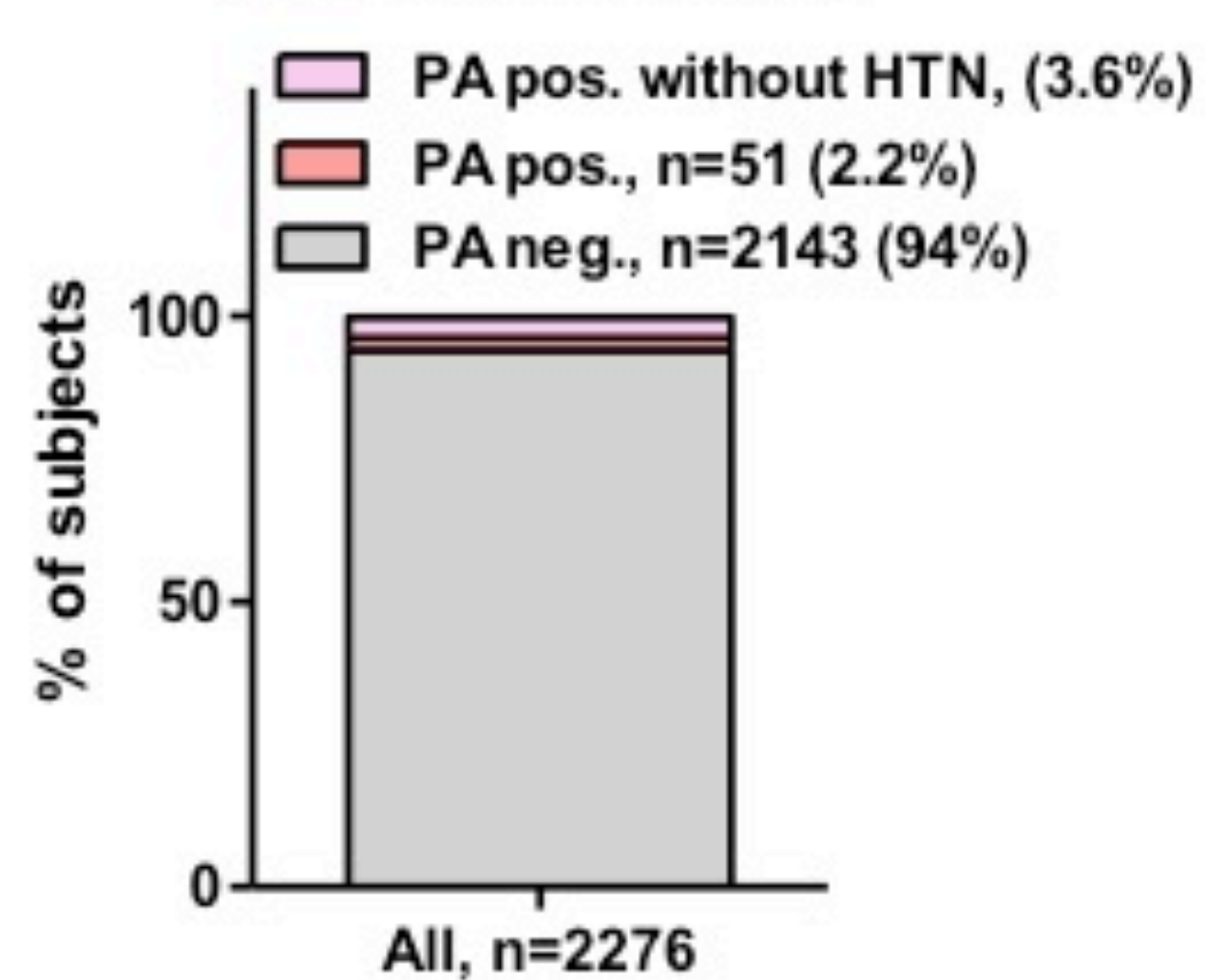
The prevalence of PA in our area is 2.2% in all population and 6.9% in hypertensive population. PA discrimination score may improve the diagnostic accuracy of PA in the screening setting. Further validation study is warranted.

PA screening

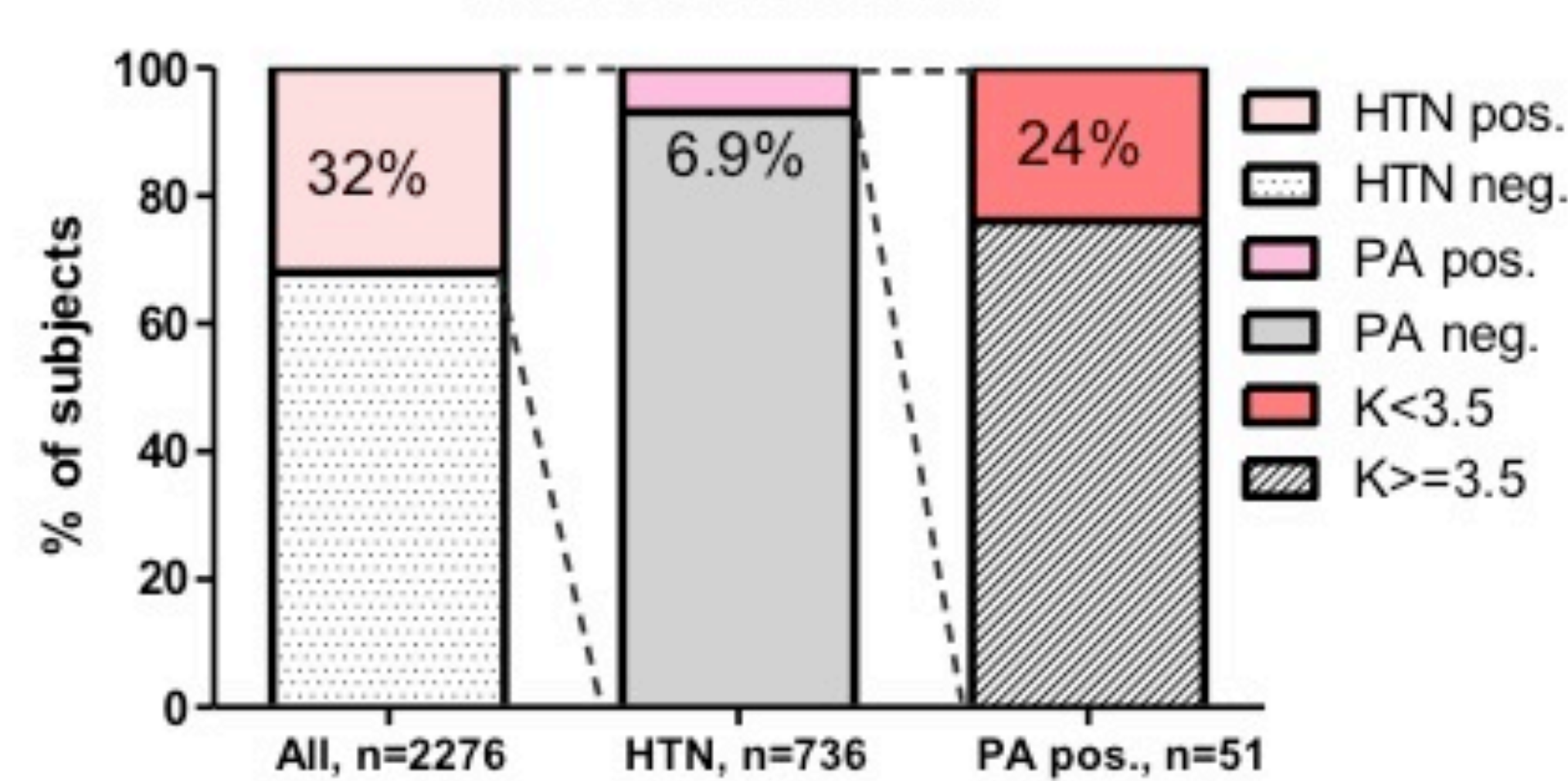


*PA screening, PAC >120 pg/mL and ARR >200

Prevalence of PA

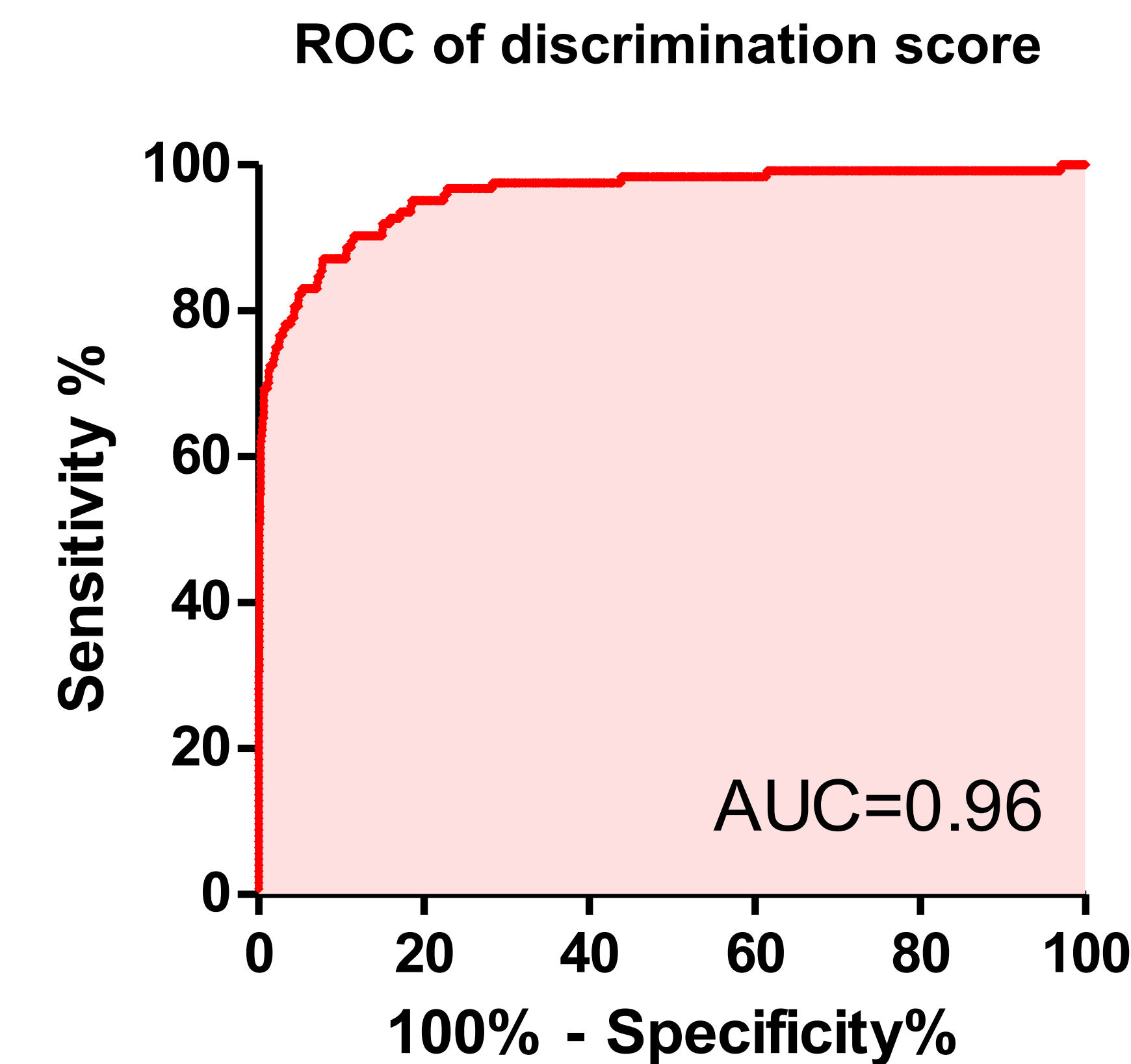
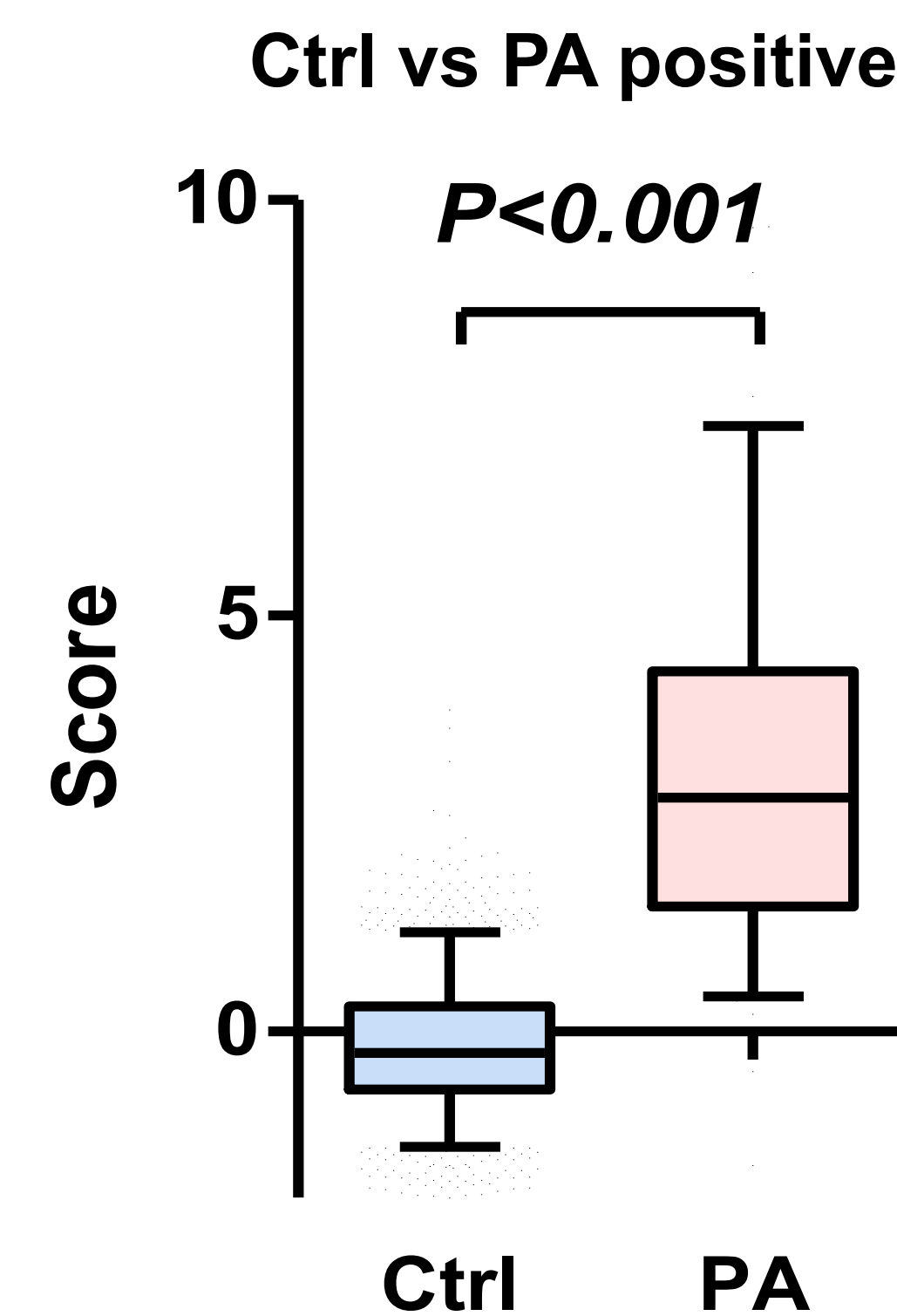


Prevalence of PA



Discrimination score

Discrimination formula = $-1*(PAC*-0.0067+PRA*0.0546+HTN*-1.0433+K*1.6904-5.3494)$



PA discriminant score	
0-1.5	Gray zone
>1.5	Further confirmatory tests for PA is strongly recommended

