Objectives: The purpose of this study was to evaluate the effect of P-wave signal averaged electrocardiography P-SAECG in PAF with hypertension (HT) and CHF. Methods: Study (1): 265 patients with PAF were enrolled. Three groups of patients were compared; lone group was without HT and CHF; HT group was with HT and without CHF; CHF group was with HT and CHF. P-SAECG were used the filtered P-wave duration (FPD), the root mean square voltages in the last 20 ms of the filtered P-wave (LP20). Study (2): 330 patients with sinus rhythm (SR) were enrolled. The methods are same as study (1). Result: Study (1): E/e’ in HT group is significantly higher than that in lone group. FPD and LP20 were not significantly different between HT group and lone group. LP20 in HT group is significantly lower than that in HT group. E/e’ was not significantly different between HT group and CHF group. Study (2): FPD and LP20 were not significantly different among three groups. E/e’ in HT group is higher than that in lone group. Conclusion: These results suggest that PAF with HT and CHF might be more atrial fibrosis and conduction delay than that with HT and without CHF. SR with HT and CHF might be atrial stretch but they have not always the conduction delay. Keyword: atrial fibrillation