Introduction: The status of SNPs among patients with extremely early-onset lone AF and the association with outcome of catheter ablation has not been evaluated before. This study evaluated the status of single nucleotide polymorphisms (SNPs) in Korean patients with early-onset (<40 years old) lone AF and effects on the outcome after catheter ablation.

Methods: A total of 89 consecutive patients (mean age 35.7 ± 3.7 years, 81 males) with drug-refractory AF (paroxysmal 64.0%) who underwent catheter ablation were included. Sixteen SNPs including rs13376333, rs10465885, rs10033464, rs2200733, rs17042171, rs6843082, rs7193343, rs2106261, rs17570669, rs853445, rs11708996, rs6800541, rs251253, rs3807989, rs11047543 and rs3825214 were genotyped. Serial 48-day Holter electrocardiographic recordings were acquired to detect AF recurrences during long-term follow up.

Result: Wild type of rs7193343 [CC; 0/7 (0%) vs. CT; 22/40 (55.0%) vs. TT; 18/41 (43.9%), p = 0.025] and rs11047543 [GG; 26/69 (37.7%) vs. GA; 13/18 (72.2%) vs. AA; 0/0, p = 0.009] and homozygous variant of rs3825214 [AA; 16/31 (51.6%) vs. AG; 22/43 (51.2%) vs. GG; 2/13 (15.4%), p = 0.05] were significantly associated with lower rate of late recurrence. When the patients were assigned to four groups according to the number of risk alleles (n=0-3), Kaplan-Meier survival analysis showed incremental prognostic value according to the number of variant alleles (p = 0.002).

Conclusion: Polymorphisms on rs7193343, rs3825214 and rs11047543 modulate the risk for AF recurrence after catheter ablation during long term follow up in Korean patients with early-onset lone AF.