Anemia and atrial fibrillation ablation recurrence: insights from a large-scale multicentre registry

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Background: Both atrial fibrillation (AF) and anemia are associated with an increased mortality, and they often coexist. Whether anemia is associated with arrhythmia recurrence after catheter ablation (CA) of AF remains unknown.

Methods: We conducted a large-scale, prospective, multicentre, observational study (Kansai Plus Atrial Fibrillation Registry). Out of 5010 consecutive patients who underwent an initial radiofrequency CA (RFCA) of AF at 26 centres, we enrolled 4966 patients whose hemoglobin data were available (age 64.4 years, 27.3% female, and 35.6% non-paroxysmal AF). The entire cohort was divided into three subgroups according to the WHO classification of anemia: normal (hemoglobin ≥ 13.0 g/dL in men and ≥ 12.0 g/dL in women, n=4300, 86.6%), mild anemia (11.0 ≤ hemoglobin < 13.0 g/dL in men and 11.0 ≤ hemoglobin < 12.0 g/dL in women, n = 519, 10.5%), and moderate-severe anemia (<11.0 g/dL in both men and women, n = 147, 3.0%). The median follow-up duration was 2.9 years.

Results: The mean age increased significantly as the anemia progressed (normal vs. mild anemia vs. moderate-severe anemia; 63.5 vs. 69.8 vs. 72.1, p < 0.0001). While the normal group and mild anemia group consisted of predominantly males (74.0% and 70.5%, respectively), the moderate-severe anemia group consisted predominantly of females (57.8%, p < 0.0001). The proportion of paroxysmal atrial fibrillation was 62.4% in the normal, 78.4% in the mild anemia, and 76.2% in the moderate-severe anemia group, respectively (p < 0.0001). The 3-year cumulative incidence of AF recurrence after a single procedure was the highest in the moderate-severe anemia group (normal vs. mild anemia vs. moderate-severe anemia, 39.6% vs. 43.5% vs. 49.7%, log-rank p = 0.0004).

Conclusion: Anemia patients experienced more frequent AF recurrences after RFCA of AF.

Figure 1. Kaplan-Meier curves illustrating freedom from recurrent atrial tachyarrhythmias with a blanking period of 90 days among all patients after the index procedure according to normal hemoglobin, mild anemia, and moderate or severe anemia before catheter ablation of atrial fibrillation.

KM curve according to anemia group