Atrial Fibrillation in Dengue Infection: Patho-Mechanism, Diagnosis, and Management Strategies – Is It a Self Limiting Phenomenon?

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**Introduction:** Dengue fever (DF) is highly prevalent in Indonesia as evidenced by 129,650 cases in 2015. Atrial fibrillation (AF) in dengue is exceptionally rare and usually self-limiting with resolution after recovery of illness. The aim of this case report is to depict two patients with AF in DF which resolves spontaneously in one and persists after infection in the other.

**Methods:** CASE ILLUSTRATION Case 1 was 50 years old male presented with fever since 4 days before admission. NS1 antigen and IgM anti-Dengue virus were positive. An electrocardiogram (ECG) showed AF with rapid ventricular response (AFRVR). Case 2 was 53 years old male presented with dyspnea and palpitations 1 hour before admission. Patient had fever since 5 days before admission. Laboratory exams showed leukopenia, thrombocytopenia and positive IgM anti-Dengue virus. An electrocardiogram showed AFRVR. Intravenous fluids (normal saline), paracetamol, and digoxin were administered in both patients. They were admitted for close monitoring. Pre-discharge ECG of Case 1 showed resolution of AF. However Case 2, AF persists in pre-discharge ECG.

**Result:** DISCUSSION The patients with dengue hemorrhagic fever and dengue shock syndrome have higher level of TNF-α, IL-6, IL-13 and IL-18, and cytotoxic factor which cause direct infection of cardiac muscle and trigger arrhythmias. The diagnosis of DHF in the first patient was confirmed by evidence of fever, rashes, thrombocytopenia, leucopenia, hemoconcentration, with positive serological tests. While diagnosis of DF in the second patient was established by the presence of fever, leucopenia, thrombocytopenia and positive serological test. Anticoagulant was not given in acute phase in both patients because of high risk of bleeding in DF and DHF. Digoxin was given as a rate control in both patients. Chemical cardioversion was not attempted, preferring observation, hoping spontaneous conversion into sinus rhythm after resolution of DF and avoiding potential embolization that may result from formation of thrombus in left atrium since onset of AF is unknown (may be >48 hours). Fortunately, AF spontaneously resolve in the first patient indicating that there was no further intervention needed besides a stricter control of blood pressure. However, in second case AF does not resolve by itself, anticoagulation should be continued 3 weeks after discharge with close follow-up whether the ECG persisted and needs cardioversion by direct current or chemical cardioversion to prevent complications arising from AF. It might not be always as ‘self-limiting’ as it thought to be.

**Conclusion:** In conclusion, physicians should be aware that a potentially reversible atrial fibrillation might be caused by this infection. It should be ensured that in those persisting cases, they should not be dismissed as just an ‘irreversible’ AF and progress into full-blown heart failure.