Multimodality cardiac imaging in Clozapine-induced eosinophilic constrictive perimyocarditis

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A 21-year-old patient started recently on Clozapine presented with chest pain, ECG changes, eosinophilia, and raised TnT. Echocardiography showed a small pericardial effusion with thickened pericardium and a striking posterolateral echo-bright area, without clear delineation between fibrin clot and subepicardial inflammatory process (Panel A). Mitral velocities showed respiratory variations suggestive of constriction (Panel B). LV contractility was preserved but longitudinal velocities were reduced (Panel C) and borderline values of mitral annular displacement (MAD) by speckle tracking suggested systolic dysfunction (Panel D).

Cardiac MRI confirmed mild systolic dysfunction (LVEF = 50%). Contrast enhanced, T1-weighted-delayed enhancement (Panel E), delineated high signal intensity band in the pericardium and adjacent epicardium consistent with perimyocarditis with spared endocardium, and mid-myocardium. BTFE cine image (Panel F) showed the true relative thickness of the myocardium and the pericardium.

One week after stopping the Clozapine the eosinophilia resolved. Repeat echocardiogram showed no change to the inflammatory features (Panel G), but the mitral respiratory variations had disappeared, suggestive of resolving constriction (Panel H), and there was normalization of longitudinal velocities (Panel I) and MAD (Panel J).

The diagnosis of Clozapine myocarditis relies on clinical presentation, imaging, and endomyocardial biopsy. In this case, multimodality imaging was used and allowed the diagnosis of constrictive perimyocarditis. Echocardiography showed pericarditis with a constrictive element and revealed infraclinical myocardial dysfunction consistent with myocarditis. On repeat study, tissue-Doppler and speckle tracking demonstrated that functional recovery before any obvious change in the inflammatory infiltrate was noted. MR confirmed and further refined the diagnosis of perimyocarditis. The agreement and complimentary role of echocardiography and MR were particularly impressive.

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