ABSTRACT BODY

Background and Purpose

Ponatinib is an oral third-generation tyrosine kinase inhibitor and is approved for patients with chronic myeloid leukemia (CML) or Philadelphia chromosome-positive acute lymphoblastic leukemia (Ph+ALL). Ponatinib has a potent effect against CML or Ph+ALL, but the phase 2 trial revealed that it often induces cardiac disorders such as heart failure and acute coronary syndrome. Herein, we describe a case of Ph+ALL which accompanied two major adverse cardiac events induced by ponatinib, and report its clinical course and cardiac imaging.

Case Description and Outcomes

An 81-year-old woman with Ph+ALL developed acute heart failure with global left and right ventricular systolic dysfunction 2 months after starting treatment with ponatinib. An echocardiogram revealed her left ventricular ejection fraction decreased to 36%, and coronary angiography showed 90% stenosis in the proximal left anterior descending coronary artery. A percutaneous coronary intervention was performed and an everolimus eluting stent was implanted in the stenotic lesion. A cardiac magnetic resonance imaging study was performed 2 months after revascularization, which showed her left ventricular ejection fraction decreased to 23% even though revascularization had been performed. High-intensity areas on T2-weighted images and late gadolinium enhancement were found at the free wall of the right ventricle, right ventricular insertion points, and mid septum in the mid-wall to the epicardium. Although ponatinib might have been the cause of her cardiac dysfunction, she continued her treatment with ponatinib because it was the only effective drug for her leukemia. Unfortunately, she became resistant to ponatinib 1 month later and died of progression of leukemia.

Discussion

Coronary arterial stenosis was initially suspected as the main cause of cardiac dysfunction, but the dysfunction persisted even after the revascularization. Moreover, cardiac magnetic resonance imaging suggested that myocardial edema and fibrosis existed in both the left and right ventricular myocardium; these changes were not in the subendocardial pattern, which is usually seen in ischemic heart disease. Thus, coronary arterial disease was very unlikely to be the main cause of heart failure and cardiomyopathy was suspected as the main mechanism.

References

Image 1