CASE REPORT

Successful Treatment of Nonbacterial Thrombotic Endocarditis and Disseminated Intravascular Coagulation in a Patient With Advanced Lung Adenocarcinoma Using Osimertinib

Hsiao-Chin Shen, MD,[a] Yen-Fu Hsu, MD,[b] Chi-Lu Chiang, MD[a,c,d,*]

[a]Division of Thoracic Oncology, Department of Chest Medicine, Taipei Veterans General Hospital, Taipei, Taiwan
[b]Division of Cardiology, Department of Medicine, Taipei Veterans General Hospital, Taipei, Taiwan
[c]Faculty of Medicine, School of Medicine, National Yang-Ming University, Taipei, Taiwan
[d]Institute of Clinical Medicine, School of Medicine, National Yang-Ming University, Taipei, Taiwan

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Case Presentation

In September 2017, a 62-year-old woman was diagnosed with metastatic lung adenocarcinoma harboring an *EGFR* L858R mutation. She underwent several treatments, including EGFR tyrosine kinase inhibitor treatment and chemotherapy. In January 2019, she was started on direct oral anticoagulant treatment because of deep vein thrombosis. However, 29 months after diagnosis, she was admitted for shortness of breath. Physical examination revealed an early diastolic heart murmur and bilateral leg pitting edema. She was diagnosed as having acute decompensated heart failure and was classified as New York Heart Association functional class III. Laboratory examination revealed thrombocytopenia (platelet count: 20,000/μL) and an elevated D-dimer level (17.89 μg/mL), which are indicative of disseminated intravascular coagulation (DIC). Furthermore, brain magnetic resonance imaging revealed multiple, tiny, scattered, early subacute infarcts, indicating systemic embolization. Transthoracic echocardiography revealed two aortic valve vegetations with severe aortic regurgitation (Fig. 1*A*). These results, along with three sets of negative blood cultures, prompted a diagnosis of nonbacterial thrombotic endocarditis (NBTE) and the treatment was changed to low–molecular-weight heparin. Platelet transfusion was done to address thrombocytopenia; however, the DIC did not improve. Circulating cell-free tumor DNA profiling revealed the presence of an *EGFR* L858R with T790M mutation; hence, osimertinib was administered and subsequent improvements in the patient's platelet count (Fig. 1*B* and Supplementary Table A1), dyspnea, leg edema, and other parameters for DIC were observed. Transthoracic echocardiography during the 1-month follow-up also confirmed improvements in aortic valve vegetations and severity of aortic regurgitation (Fig. 1*A*).

Discussion

McKay et al.[1] have proposed an NBTE triad: heart murmur, multiple systemic emboli, and malignancy. In general, cancer-related NBTE treatment includes therapy against the underlying malignancy and systemic anticoagulation using unfractionated heparin, low–molecular-weight heparin, or nonvitamin K–dependent agents.[2] However, in this case, osimertinib administration improved the DIC and decreased the vegetation size within 1 month, which highlights the role of effective cancer treatment in the management of cancer-related NBTE. This case indicates that NBTE should be considered in patients with systemic embolization and DIC, especially in those with advanced cancer. NBTE in patients with cancer could

*Corresponding author.

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Address for correspondence: Chi-Lu Chiang, MD, Division of Thoracic Oncology, Department of Chest Medicine, Taipei Veterans General Hospital, 201, Section 2, Shih-Pai Road, Taipei 112, Taiwan. E-mail: clchiang@vghtpe.gov.tw

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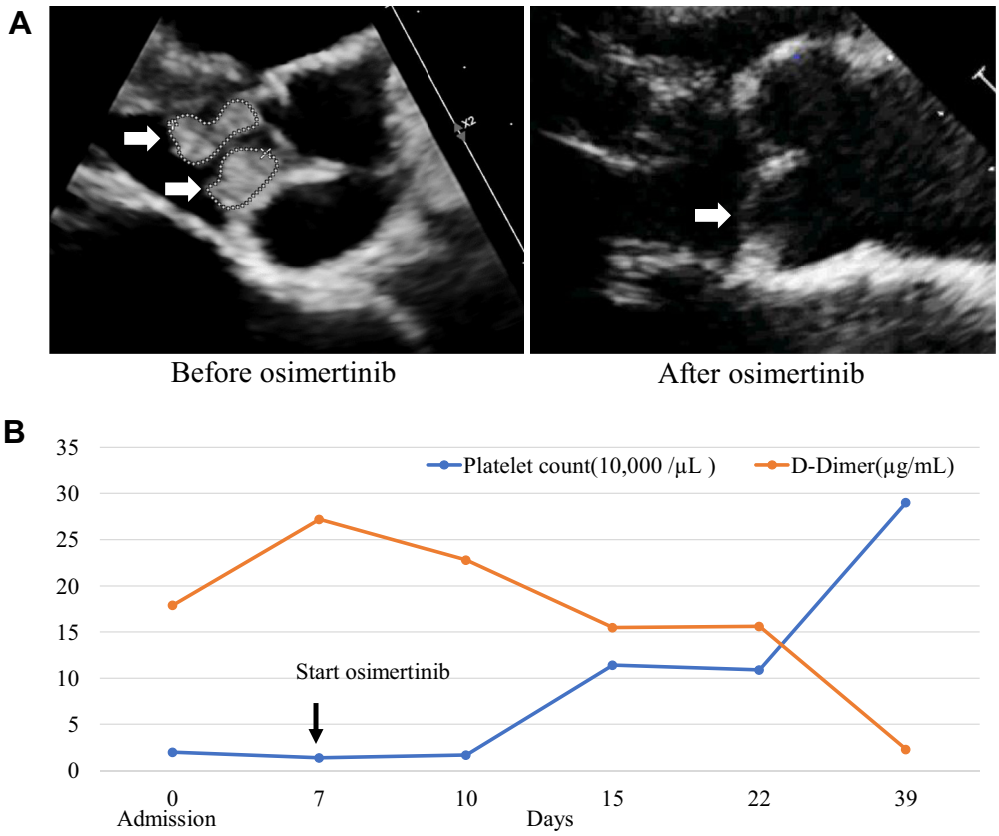

Figure 1. *(A)* Echocardiographic images of the patient before (left) and after (right) osimertinib treatment. The arrows indicate two large vegetations on the aortic valve, resolved after osimertinib administration. *(B)* Timeline of laboratory data. Reference range, adult: platelet count: from 15 to 35 (10,000/μL), D-dimer: less than 0.5 μg/mL.

represent an underlying uncontrolled disease, and a change in treatment should be considered. This case also confirms the efficacy of osimertinib in patients with *EGFR* mutations[3,4] who had severe thrombotic events like NBTE and underwent extensive treatments, even under a poor performance status.

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Supplementary Data

Note: To access the supplementary material accompanying this article, visit the online version of the *Journal of Thoracic Oncology Clinical and Research Reports* at www.jtocrr.org and at https://doi.org/10.1016/j.jtocrr.2020.100066.

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