Complex Presentation of Immune Checkpoint Inhibitor Myocarditis

Kimberly Bukoski, DMSc, PA-C
University of Lynchburg

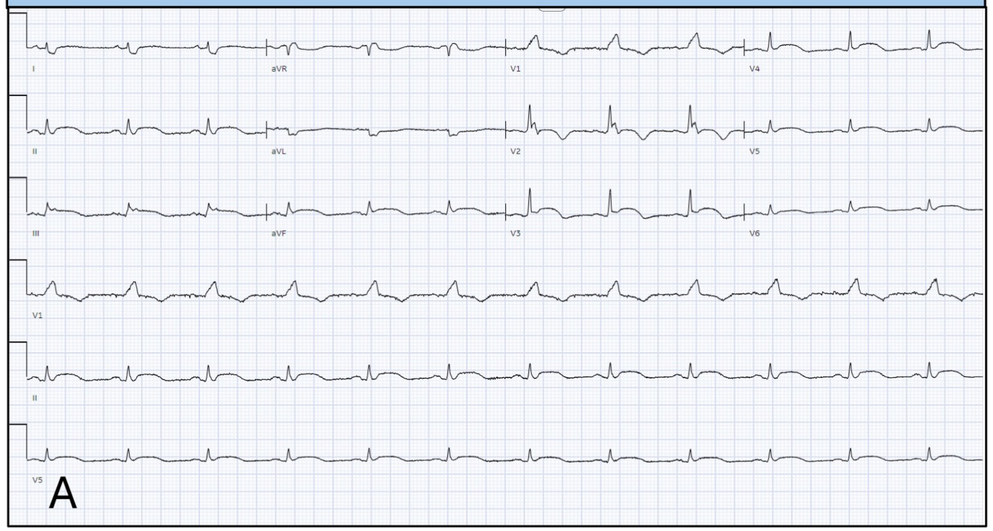
Introduction

- Immune checkpoint inhibitors (ICI) have revolutionized oncological treatment and thus continue to be utilized for various cancers
- ICI therapy can carry life-threatening immune-related adverse events (irAEs)
- ICI myocarditis is a complex process with prevalence of 1% and mortality rate of 25-50%[1]

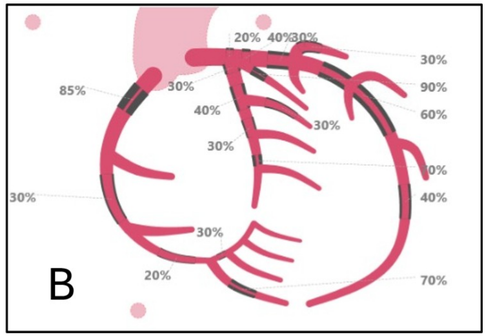
Case

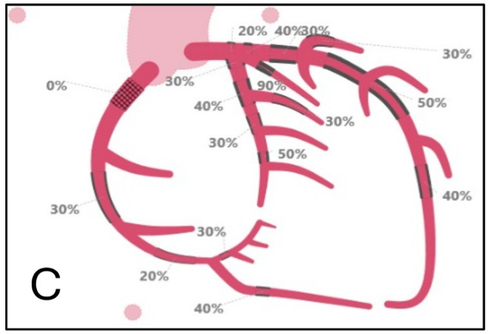
- 78 y/o male with buccal mucosa squamous cell carcinoma treated with cetuximab four weeks prior, underwent elective mandibulectomy complicated by inferior ST elevation myocardial infarction (STEMI) and myocarditis
- Postop inferior STEMI treated with emergent revascularization of occluded right coronary artery (RCA), normal echocardiogram post revascularization
- Two days later, patient developed chest pain, frequent NSVT, rising cardiac biomarkers, worsening ST elevations and transient high degree AV block
- Repeat catheterization with patent RCA stent, endomyocardial biopsy performed and confirmed diagnosis of myocarditis
- Methylprednisolone 1g IV x 3 days followed by 1mg/kg oral prednisone daily with slow taper for 8 weeks

Diagnostics



A. Postop ECG showing inferior STEMI





B. Initial postop catheterization showing RCA occlusion
C. Repeat catheterization with patent RCA stent, endomyocardial biopsy performed

Conclusion/Discussion

- ICI myocarditis varies in presentation, ultimately requiring high index of clinical suspicion
- Prompt diagnosis and treatment is crucial for favorable outcomes
- cMRI is more specific than conventional cardiac testing with cardiac biomarkers, electrocardiograms and echocardiograms[3]
- Diagnostic gold standard is endomyocardial biopsy[2]
- Treatment includes early initiation of high dose steroids followed by a slow taper for 4 to 6 weeks and discontinuation of ICI therapy[2]
- Additional use of intravenous immunomodulators such as Abatacept can be considered if there is an inadequate response to steroids[2]

References

1. Patel RP, Parikh R, Gunturu KS, et al. Cardiotoxicity of immune checkpoint inhibitors. Curr Oncol Rep. 2021;23(7):79. doi:10.1007/s11912-021-01070-6
2. Palaskas N, Lopez-Mattei J, Durand JB, et al. Immune checkpoint inhibitor myocarditis: pathophysiological characteristics, diagnosis, and treatment. J Am Heart Assoc. 2020;9(2):e013757. doi:10.1161/JAHA.119.013757
3. Ganesh S, Zhong P, Zhou X. Cardiotoxicity induced by immune checkpoint inhibitor: The complete insight into mechanisms, monitoring, diagnosis, and treatment. Front Cardiovasc Med. 2022;9:997660. doi:10.3389/fcvm.2022.997660