Immune-check Point inhibitors : Acute Cardio-Oncology Challenges and Concerns

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Introduction:

Immune check point inhibitors (ICI) are increasingly used in management of cancers.Their ultra-modern benefits are often over-shadowed by adverse events collectively termed as ***'Immune-related Adverse Events'*** .The incidence of ICI-Induced Cardiotoxicity is immensely under-reported and the most common presentation is Acute Myocarditis in up-to 2.4% patients. Other manifestations include Takotsubo cardiomyopathy, VTE, Plaque rupture etc. [1] I present a case of ***Pembrolizumab (ICI) induced Symptomatic stable Myocarditis.***

Case Presentation:

48 year old Gentleman with Metastatic Melanoma managed with Immunotherapy admitted to CCU from oncology day unit with cardiac chest pain over 3 days. Initial investigations revealed non-specific changes on ECG,Troponin-T of 474 and CRP of 10. Chest X-ray showed mild congestion whilst Echo demonstrated normal EF and CTPA excluded PE. An IP-Coronary Angiogram showed normal coronary arteries. Finally, Cardiac-MRI showed edema and non specific inflammatory reaction.This patient was managed as Myocarditis with IV steroids.

Mechanism of ICI- induced Myocarditis :

Although Mechanism is not entirely clear.The most widely accepted hypothesis is based on suppression of immune inhibitory receptors (overly expressed in cardiac tissue) by these novel agents. Certain mice models have suggested that this leads to unregulated activation of T-cells and infiltration of myocardium. [2]

Diagnosis and Management of ICI-induced Myocarditis:
ICI- induced myocarditis presents with non specific symptoms like chest pain and SOB posing diagnostic challenges. Almost 100% patients present with rise in troponin. ECG, Echo and Angiogram helps exclude ACS. Cardiac MR remains imaging modality of choice based on Lake-Louise criteria whilst the gold standard is Endomyocardial biopsy.
Management is based on grades of severity and involves use of steroids and immunosuppressive therapies. Grades encompass subclinical and symptomatic (Stable, Unstable or Decompensated) myocarditis.

Future Considerations:
ICI's, although cutting-edge pose multi-system challenges that merit further research. Concerns looming around diagnostic uncertainty with exact timings of tests to be done needs further RCTs.

References :

1. https://www.ahajournals.org/doi/10.1161/JAHA.119.013757

2. https://www.acc.org/latest-in-cardiology/articles/2019/06/21/08/45/emerging-concerns-in-cardio-oncology

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About Author :

Author is a young Internal medicine trainee doctor in northwest of England. He graduated in 2017 and is an Oncology aspirant. He is the Valedictorian of his undergraduate batch and is trainee representative of his hospital.He is involved in one case report (accepted) and two case reports that are now submitted.

He wishes to present this case in forthcoming Internal Medicine conference to increase awareness of immunotherapy related acute presentations and to enhance his portfolio for oncology interviews in December 2021.

Case reports titles :

1. Atypical presentations of Covid-19 in frail population (accepted in EGS October 2020 edition)
2. Difficulties in management of suspected Primary antiphospholipid syndrome in stroke patients (submitted)
3. Smoke pot and have a Heart attack : Cannabis Induced STEMI : Vasospasm, pathophysiology and Legality. (Submitted in BJ-Cardio)

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