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Beyond Acute Coronary Syndrome: Troponin Kinetics and Assay Concordance Reveal ICI-Associated Myocarditis

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Beyond Acute Coronary Syndrome: Troponin Kinetics Reveal ICI-Associated Myocarditis

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BACKGROUND

- High-sensitivity cardiac troponin is a central tool not only for ACS but also for management of the manifestations of cardio-oncology
- Troponin kinetics, assay-specific differences (hs-cTnI vs hs-cTnT), multimodal imaging can help when trying to distinguish between ACS and non-obstructive etiologies

CASE PRESENTATION

- 73 F with metastatic RCC on Lenvatinib and Pembrolizumab presents with chest pain
- EKG with nonspecific ST elevations and t wave inversions
- Hs-Troponin I: 13,600 ng/L rising to >125,000 ng/L within 12 hours, Hs-troponin T 2430 ng/L, CPK 354 U/L
- ACS suspected, LHC unremarkable, recurrent chest pain prompted repeat LHC which was again unremarkable
- Cardiac MRI with mildly reduced LVEF 44% with extensive non-ischemic late gadolinium enhancement (LGE) with elevated T2 signal consistent with immune check point inhibitor (ICI)- myocarditis
- High dose steroids were started, but troponins continued to rise which prompted initiation of abatacept therapy
- Resolution of myocarditis revealed profound tumor response to ICI

DISCUSSION

- This case highlights the diagnostic value of troponin kinetics, as a persistent rise despite two negative angiograms raised suspicion for a non-ischemic process
- Cardiac MRI confirmed myocarditis with LGE (see figures), emphasizing biomarker–imaging concordance
- A markedly disproportionately elevated hs-cTnI with a mildly elevated hs-cTnT and CPK, underscores the complexity of biomarker interpretation in cardio-oncology
- This dissociation between the two types of cardiac biomarkers along with elevated inflammatory markers and multimodal imaging is most consistent with myocarditis
- Alternatively, during immune checkpoint inhibitor therapy, it is also possible to have an alternate presentation of myocarditis during the early, mild injury states where hs-cTnT is elevated while cardiac specific hs-cTnII remains normal

Persistent troponin elevation in oncology patients without obstructive coronary represents a high-risk, under defined entity

Early Integration of advanced imaging and nuanced biomarker interpretation may reduce unnecessary invasive procedures and improve diagnostic accuracy



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FIGURE 1

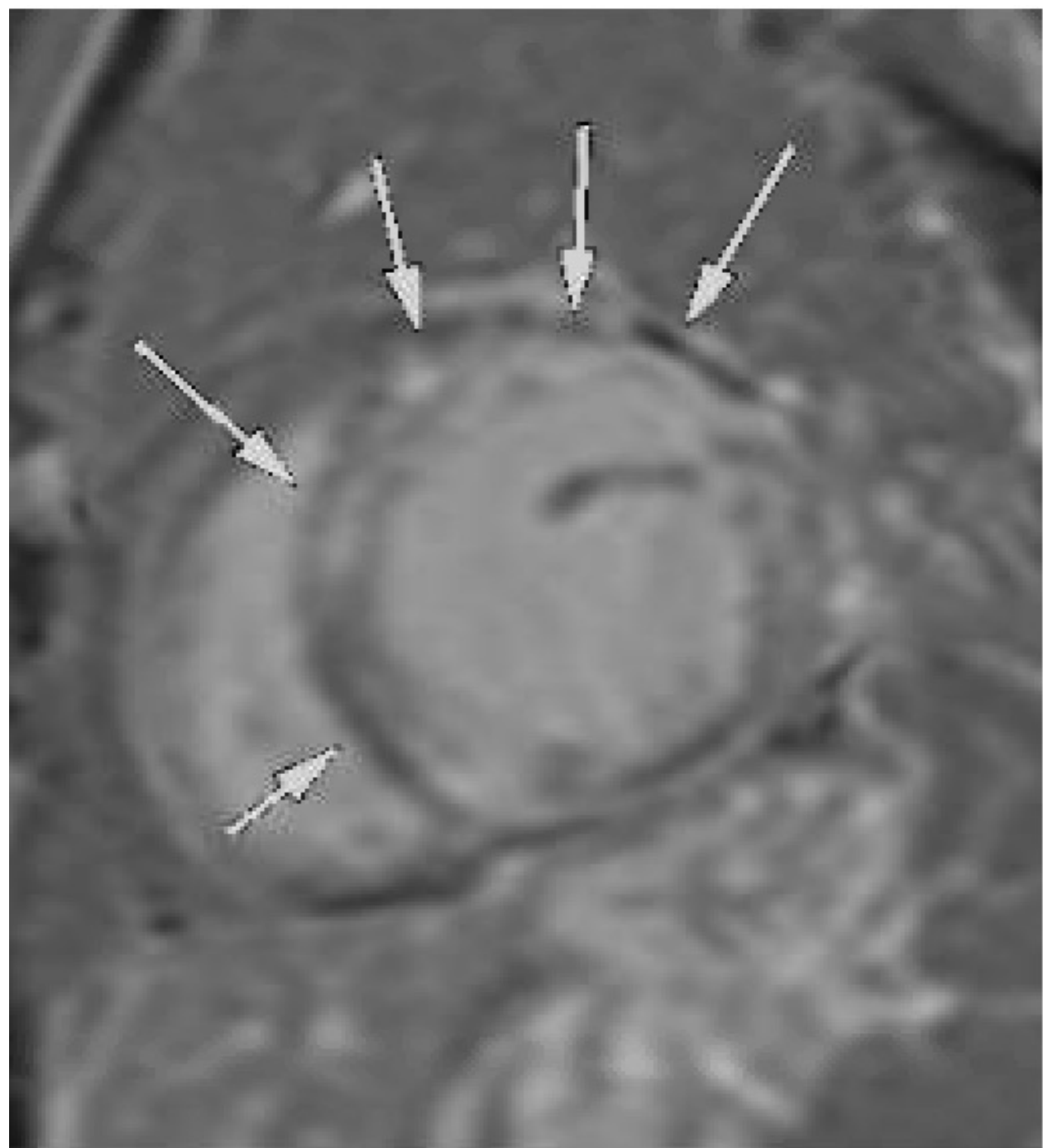


FIGURE 2



FIGURE 3

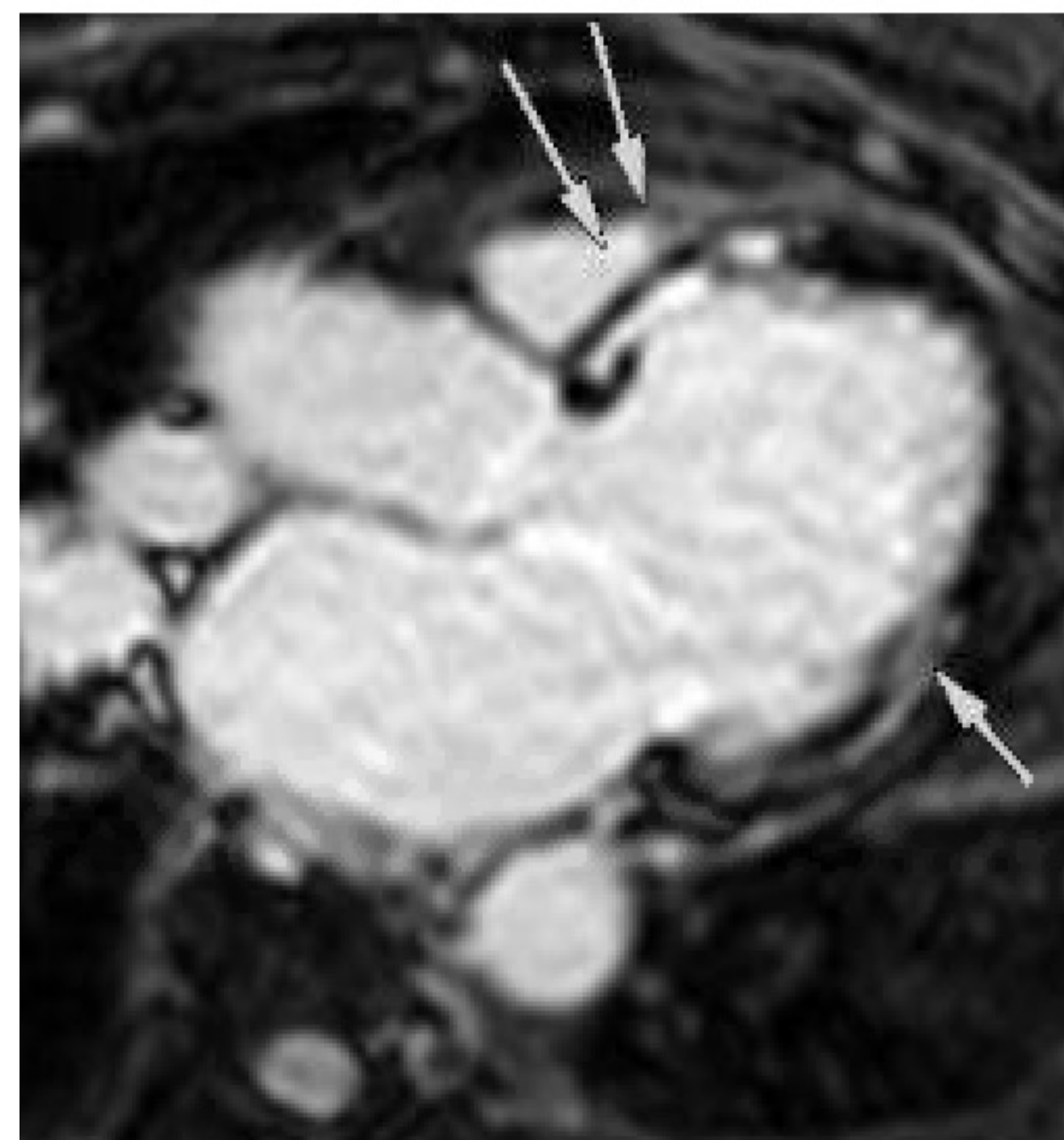
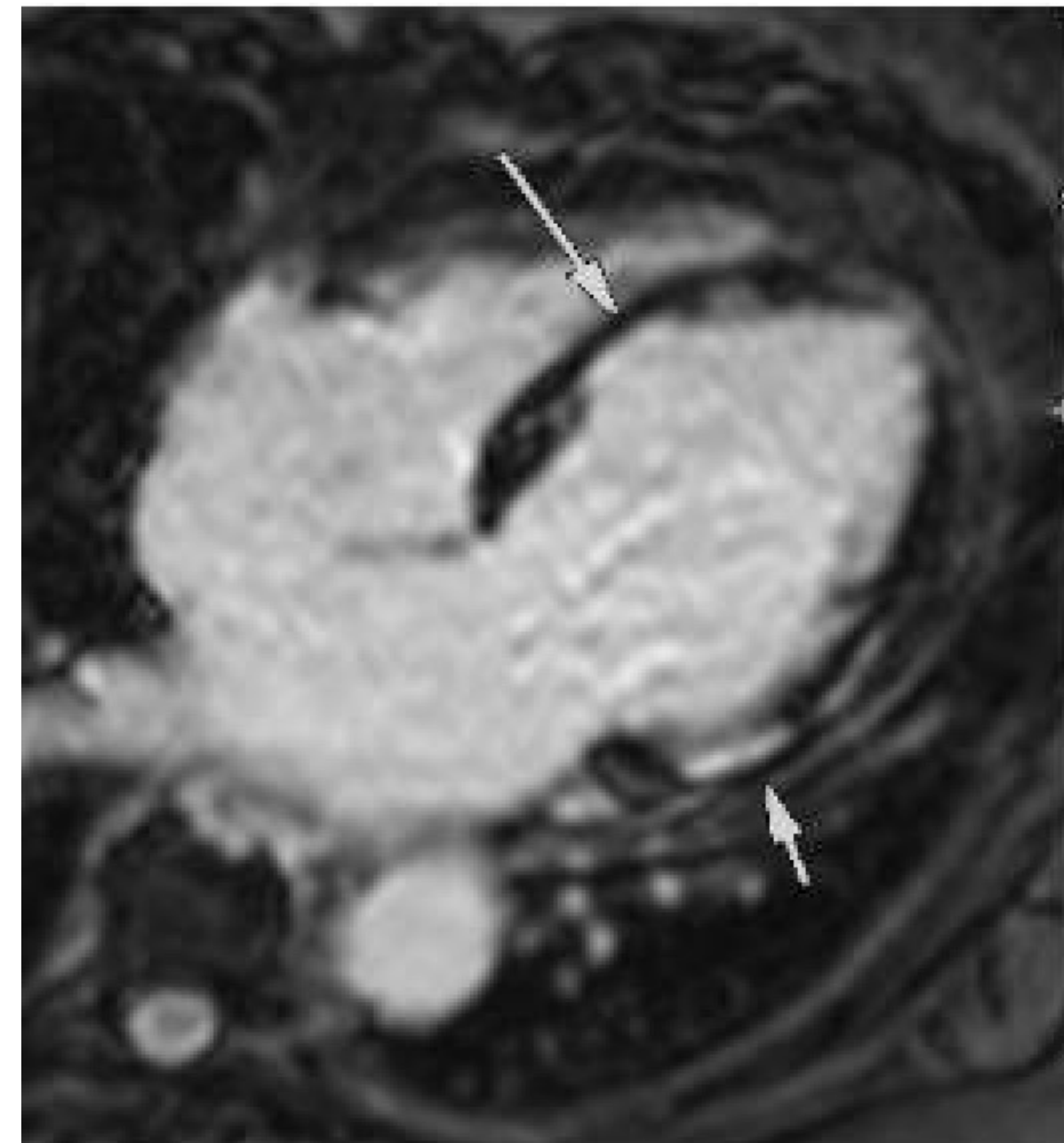


FIGURE 4



All figures are images from the MRI completed during diagnostic work up in the case presentation. Figure 1: Basal Short Axis view with LGE. Figure 2: 2-Chamber view with LGE. Figure 3: 3-Chamber view with LGE. Figure 4: 4-Chamber with LGE.

CONCLUSION

- Persistent troponin elevation in oncology patients without obstructive coronary disease represents a high-risk, under-defined entity.
- It is important to favor myocarditis over ACS when the rate of hs-cTnI rises is patchy, waxing/waning, and persistently elevated rather than when there is a sharp rise with prominent delta changes
- Early integration of advanced imaging and nuanced biomarker interpretation may reduce unnecessary invasive procedures and improve diagnostic accuracy.

DISCLOSURE INFORMATION

We do not have any financial or non-financial interest that has arisen directly from application of this research. There is no competing interest to declare.