

Tracking cardiac troponin dynamics in patients treated with immune checkpoint inhibitors

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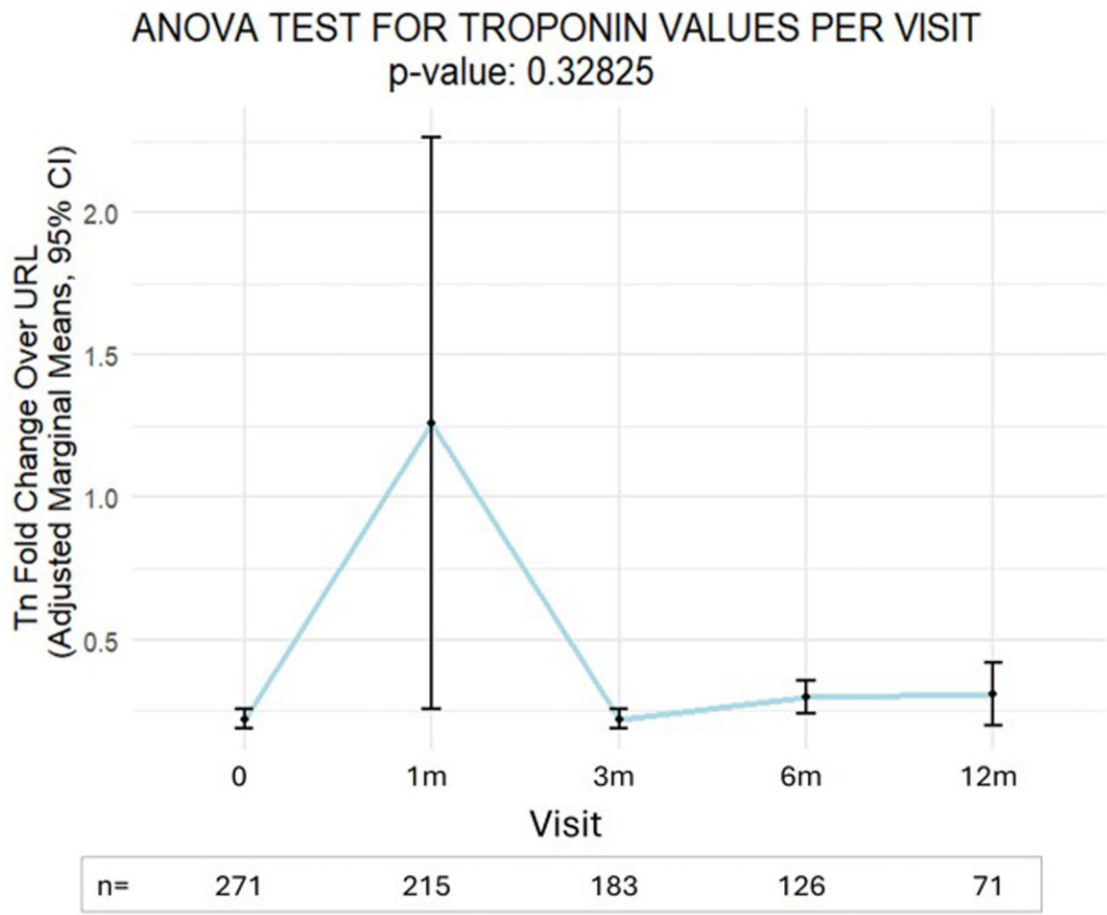
Introduction: Immune checkpoint inhibitors (ICIs) have transformed cancer treatment, significantly enhancing patient survival. However, while ICIs are not commonly associated with cardiotoxicity, elevations in cardiac troponin are frequently observed, with unclear clinical implications.

Purpose: This study aims to describe the dynamic of cardiac troponin levels in patients with various types of cancer who are candidates to ICI during the first year following treatment initiation.

Methods: The analysis includes the first 288 cancer patients from the SIRCVT, a multicenter prospective registry, who were treated with ICIs and showed no clinical evidence of cardiotoxicity during the first 12 months of follow-up. All patients underwent comprehensive cardiovascular assessments, including EKG, cardiac biomarkers, and cardiac imaging tests, at baseline and over 12 months after ICI initiation. Troponin results were normalized as a multiple of the upper reference limit (URL) of each site laboratory. Statistical analysis included ANOVA test, and a linear mixed model adjusted for time of visit, age, sex and tumour type.

Results: The median age was 66 ± 12 years (68% male, 83% had at least one cardiovascular risk factor and 32% had previous cardiac disease). The most common malignancies were non-small cell lung cancer (57%), breast cancer (7%) and melanoma (7%). ICIs included antiPD-1 (64%), antiPD-L1 (26%) and antiPD-1 combined with antiCTLA4 (9%), with metastatic disease as the predominant setting (73%). Baseline average cardiac troponin measures were within normal limit (0.32 ± 1.19 fold-change over URL); however, 10 patients showed abnormal baseline levels. A transient rise was observed at the first month visit (0.62 ± 4.55 above URL) which returned to baseline levels by the third month (ANOVA test: $p=0.32$, Figure 1). This trend was confirmed in the linear mixed model (variance at 1st month = 0.31 ± 0.18 ; $p=0.08$) among patients with initially normal troponin levels. Abnormal troponin levels were frequent during the first year, even in the absence of clinical cardiotoxicity (Figure 2). NT-proBNP levels showed no significant variation over time.

Conclusions: Mild elevations of cardiac troponin are common in patients treated with ICI and no clinical evidence of cardiotoxicity during the first 12 months of follow-up. Nevertheless, the long-term clinical relevance of these changes remains uncertain. Clinical and translational correlations are necessary to understand its real significance.



Troponin dynamics during 1st year of ICI

