A Rare Case of Palbociclib Associated Cardiac Dysfunction: Insights From the European Society of Cardiology Cardio Oncology Guidelines Toward a Permissive Cardiotoxicity Approach

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Background

Cyclin dependent kinase 4/6 inhibitors with endocrine therapy are first line treatment for hormone receptor positive, HER2 negative metastatic breast cancer and have improved survival. Their recognized cardiovascular toxicity is QT prolongation, mainly with ribociclib. Cardiomyopathy and heart failure are increasingly recognized, yet the 2022 ESC Cardio-Oncology Guidelines offer no left ventricular surveillance or management pathway for this class.

Case Presentation

A 73-year-old woman with hypertension, diabetes and normal left ventricular ejection fraction (LVEF) of 60% started anastrozole and palbociclib for breast cancer metastatic to bone.

Six months later she was admitted for nausea, vomiting and epigastric pain, found to have troponin elevation, new left bundle branch block (LBBB) and LVEF 44% without obstructive coronary disease on left heart catheterization. She was discharged on metoprolol and valsartan for management of nonischemic cardiomyopathy, with palbociclib continued pending cardiology follow up.

Over a year later she was readmitted with decompensated heart failure and LVEF 25 to 29%. She was diuresed, palbociclib was held, empagliflozin and spironolactone were started, and she was referred to cardio-oncology, which required LVEF above 40% without clinical heart failure to resume. She declined cardiac magnetic resonance due to claustrophobia.

Off palbociclib, LVEF improved to 45%, fell to 35% after rechallenge, then recovered to 41% with palbociclib continued.

Teaching Points

1. Palbociclib can cause CTRCD, beyond its known QT effect.
2. Baseline cardiac risk assessment and imaging before CDK4/6 inhibitors would have set a true baseline.
3. A first LVEF decline warrants cardio-oncology referral and interval imaging; here, 15 months passed without either.
4. Permissive cardiotoxicity needs a predefined threshold, GDMT and scheduled surveillance, along with multidisciplinary decision making and patient specific factors.

LVEF Trajectory

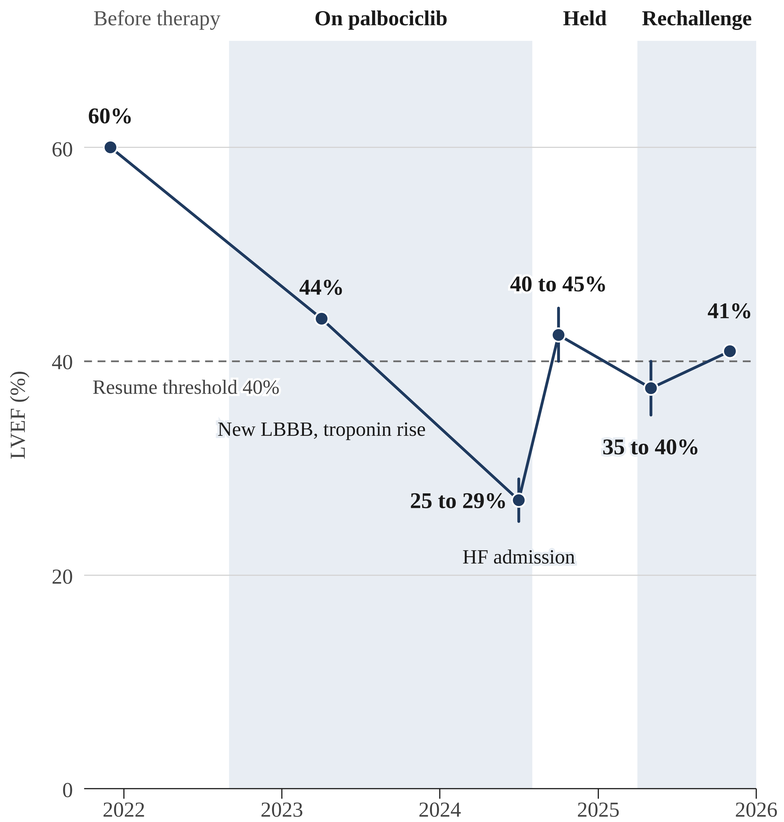


Figure 1. LVEF by transthoracic echocardiography. Shaded periods: on palbociclib. Vertical bars: reported ranges. No echocardiogram was performed between April 2023 and July 2024.

Classification of Her CTRCD Presentation According to ESC Guidelines

Event	Grade	Criterion met
Apr 2023	**Asymptomatic, moderate**	LVEF fell ≥10 points to 40 to 49%, with troponin rise
Jul to Aug 2024	**Symptomatic, severe**	Heart failure hospitalization

Clinical Decision Making

ESC guidance for CDK4/6 inhibitors addresses only QT monitoring. The HER2 targeted therapy pathway was applied by analogy.

ESC 2022 recommendation	Class, Level
Temporary interruption in moderate or severe symptomatic CTRCD; multidisciplinary decision to restart	**I, C**
Heart failure therapy for symptomatic moderate to severe CTRCD with LVEF below 50%	**I, B**
Continuation with closer monitoring in asymptomatic moderate CTRCD (LVEF 40 to 49%)	**IIa, B**
Resumption once LVEF recovers to 40% or higher and asymptomatic, on HF therapy with echo and biomarkers every two cycles	**Should be considered**

Permissive Cardiotoxicity

Accepting stable, compensated cardiac dysfunction to keep effective cancer therapy. With metastatic disease controlled on first line therapy, palbociclib was continued with a predefined LVEF threshold, GDMT, serial echocardiography and a CRT contingency, through shared decision making with the patient.

Conclusion

Palbociclib CTRCD needs greater attention, with baseline and serial imaging in at risk patients. Cardio-oncology referral and guideline informed permissive cardiotoxicity preserved cancer therapy with stable cardiac function.

References

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